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(Cover) Queensland Ballet touring Coppelia

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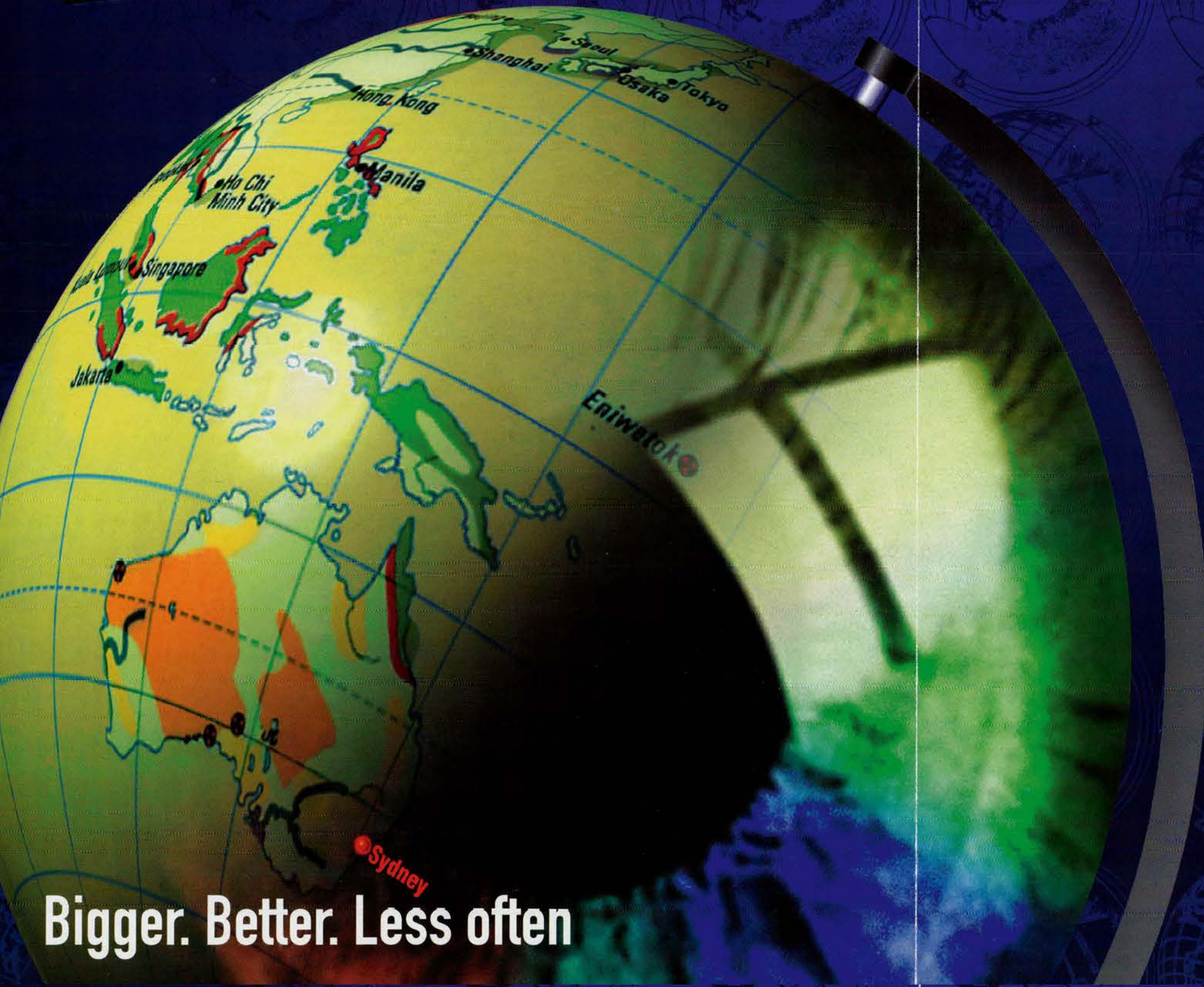
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JOIN US AS WE TRY TO MAKE ENTERTAINMENT TECHNOLOGY FUN

Reviews:

Dataton control system



Soundcraft Ghost



Cyberlight



Very small microphones

◆ Gambling and diversity conspire to hobble the entertainment dollar

Theatre's Dog Days

By Mandy Jones

MELBOURNE: Has this southern city gone from being the third point in the world's cultural triangle to an entertainment industry barely afloat? The health of the city's live entertainment industry varies greatly depending who you talk to. While it is still too early to ascertain exactly what effect the Crown Casino has had on the industry in Melbourne, the spread of a casino culture has already had a notable effect on growth areas.

The last twelve months have seen some great upheavals in Melbourne theatre. *Sunset Boulevard* came and went, *Chess* barely made it off the starters blocks, and *Red Hot & Rhonda* turned the critics into packs of rabid dogs. But

there were also unexpected hits such as the extended season of *A Little Night Music* which MTC moved to the Princess Theatre following the crash of *Chess*. *Sweet Charity* played its full season before touring, Playbox have enjoyed great audience response to their productions, and *Oba Oba's* season was extended twice.

When Victorian Premier and Arts Minister Jeff Kennett made the comment that Melbourne was the third point in the triangle (the other points being London and New York) it was at a time when everything looked rosy on the Melbourne scene. The Regent and Plaza refurbishments had just been finished and *Sunset Boulevard* had opened for what was expected to be an 18 month season. Eight

months later, the troubled mega-musical closed after playing to far less than capacity houses and having more than its share of controversial front page headlines.

The early demise of *Sunset* was a shock to the local industry in as much that Melbourne had always loved musicals and had always been able to sustain them. *Phantom of the Opera*, *Les Miserables* and *Beauty and the Beast* had played long seasons, and with return seasons already planned for *Phantom* and *Les Mis*, there is still an air of confusion about why *Sunset* wasn't a hit. Fingers are being crossed all around Melbourne with the opening of *Jekyll & Hyde* on October 25 beset by funding problems.

Continued on page 10

Concert drought

By Nazir Keshvani

SINGAPORE: In the past two years there has been an obvious slowdown in Singapore's English language concert market. Where Hootie and The Blowfish played the Singapore Indoor Stadium (SIS) in March there were only about 3,000 people in a venue that can hold crowds of 8,000 to 10,000.

This is a stark contrast to the early '90s, when the English pop/rock concert scene started booming in Singapore. A concert by Paul Simon at the SIS in 1991 attracted more than 11,000 people. The last series of big concerts at the SIS took place in 1995, when Pearl Jam and R.E.M. performed to sell-out crowds. The two main players in

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I was in a **Band**

The bad old days remembered! P51

FOOTY OB!

Mic'ing GRUNTS and swearwords

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Club Sandwich New, page 92

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Subscriber rewards: see page 11

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◆ Even if interest rates fall further, now is the time to invest in your business, argues Julius Grafton

Cost of money the main business block

Interest rates have never been this low and must rise soon. A fall now would be so insignificant that if you lock onto an interest rate today which becomes half a percent lower next week, then the difference isn't worth worrying about.

With investment loans for property hovering around 7.5% if you can't buy business premises now then you never will. We at Connections bit the bullet recently when the opportunity arose to quit our lease on the salubrious office suite we had occupied for 2.5 years arose.

Our bank loaned us 90% of the cost of a clapped out cottage hidden away in our suburb, by chance six doors from where we live. The interest rates offered varied from 7.2% variable to 7.9% fixed for five years. We took the fixed rate.

The mortgage repayments are within a hundred dollars of what our rent was! Naturally there were extensive moving and refurbishment costs, so we needed to find about 10% of the value of the new premises to fund all these, on top of the 10% deposit. Our \$280,000 cottage cost us about \$40,000 in cash. From here on, hopefully the business will manage to pay the mortgage and in 20 years it's ours. Provided you renew your subscription.....

Financing Equipment

Real estate is different to hardware that you need to operate your business. But the lesson is

that if you are financing your equipment, then the interest rate is everything. Today it is possible to lease equipment at around 9%, although expect to pay 12% if the amount is under \$50,000 or if you are unknown or new in business.

I can assure readers that when we bailed out of the industry in 1988 ahead of the recession, we had a lot of equipment on lease at an *average* rate of 18%. Fortunately we were able to assign these leases to the people who bought our businesses.

A large trap exists in lease finance where you deal with your bank or a bank finance company. There is a pair of ugly words written into the contract: cross collateralisation.

Bill Allen is in charge of a Sydney based independent financier, Master Lease and Rental Finance. "Never put your eggs in one basket" he told me. "Banks will count your exposure. You may have a \$100,000 overdraft that you are happy with. Then you lease a car for \$50,000 and they count their exposure as \$150,000. One day they can foreclose on you for the entire exposure".

Connections advises readers to spread finance exposure, even at risk of paying slightly more interest. We had a single exposure to the ANZ Bank in 1988 which exceeded one million dollars. Fortunately we had one co-operative bank manager and circumstances worked in our favour to repay the

money. Many people then and since were less lucky, a bank has absolute power to appoint an administrator or receiver at any time.

More sinister is the problem that because a bank holds your company articles of association when you open your company bank account, you are physically prevented from opening an account with a different bank. Your bank can then 'freeze' your account to reduce your overdraft, for example, by crediting all your deposits but by not honouring any of your cheques! It happens.

If you hold an account elsewhere, at least you can operate a business while you sort out your relationship with the other bank.

Rental 'Operating Lease'

Master Lease also offer, as do others, rental finance (an 'operating lease') where the whole value of the financed equipment remains off your balance sheet, and the entire rental payment is tax deductible. Bill Allen says there are a lot of naughty deals out there where supposed rental agreements have a 'position' built into the terms, forcing a balloon payment at the end of the rental period. These create tax problems if you are audited.

A rental agreement will typically operate for three years, at the end there are three options. You may extend the agreement at a reduced rate, hand back the equipment and walk away, or ne-

gotiate to buy the equipment. But for it to be a true rental agreement in the eyes of the tax commissioner, it must not contain a buy back sum.

Indicative rates quoted by Master Lease are \$27 per \$1000 per month financed for a lease (over 36 months with a 20% residual) and \$32 per \$1000 per month for a 36 month rental contract.

For those mathematically challenged readers, this equates as follows:

Amount financed	Lease per mth	Rent per mth
\$50,000	1,320	1,600
\$75,000	2,025	2,400
\$100,000	2,640	3,200

(Remember these payments are rough numbers, you can pay more or less than these, you can also pay less for a longer term or more for shorter).

Save 40%
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PLASA '97 ANOTHER ENGLISH FLOWER

▼ *Caroline Grafton reports from London*

Whilst the English Rose that was and is Princess Diana was being laid to rest amid the emotional devastation that engulfed England and especially London, the seeds of PLASA '97 were being germinated. Pollination occurred previously, at the many meetings it takes to prepare a trade show, and the anxious construction and organisational time before opening.

PLASA means Professional Light and Sound Association, who present this exhibition each year in Earls Court, London. The exhibition itself is typical of where trade shows and indeed the entertainment industry around the world are heading.

Twenty years ago, PLASA the trade show commenced its ascent, addressing the emerging lighting industry, predominantly for discotheques.

Since then PLASA has responded to interest from both exhibitors and visitors, from all aspects of our burgeoning industry. Today PLASA reflects the merging of all industry genres. This year saw a vast number of lighting exhibitors, a healthy growth in Professional Audio product representation, as well as major steps in the Vision sector.

Earls Court itself is not a glam-

orous but a fitting venue. It has been the home to major London concerts, it seems forever. It is also the only venue in London that allows for the unique requirements of our industry, large useable floor area, height and power.

Earls Court is designed on two levels. The lower and larger level contained predominantly lighting exhibitors with a smattering of audio.

The upper level, of mezzanine design, was home to the majority of audio and vision specialists. It was very quiet and a welcome respite from the lower levels, where audio choreographed displays were not particularly loud but a consistent buzz. The upper level also provided a panoramic view

of the huge (some multi-level) exhibits below.

All in all the event was a success. The 323 exhibitors, covering a total of 11,221m², enjoyed the patronage of some 13,000 international trade visitors over the four day period of the trade show.

Congratulations to PLASA and P&O Events (the organiser) on a job well done.

• Please see the pertinent areas of this and next issue for new product release information.



EAW launch KF900

▼ Olympic omen for games PA aspirant



ATHENS: EAW have installed the world's first KF900 PA system at Olympic Stadium in Athens. The new design FA cabinet range was released at the AES show in New York at presstime, and was installed earlier at the 85,000 seat venue by Alpha Sound.

EAW is the loudspeaker type specified for the Sydney Olympic Stadium, with the winning tender due to be announced soon. Tenderers are expected to quote alternative types to EAW, however in the words of another manufacturer, 'it's a done deal for EAW'.

The Athens Olympic Stadium installation puts EAW close to having their speakers installed at two Olympic Stadiums in a row, with Greece winning the rights to stage the 2004 event directly after the Sydney Games.

• **Meanwhile** a new technical paper authored by EAW senior engineer Jeffrey Rocha is now available. Titled 'Frequency Response: A Question of Choice and the Search for Meaningful Depiction', Rocha discusses the importance of frequency response to the sound system design.

He also looks at a variety of ways of determining frequency response and presents a way to quickly determine if a loudspeaker meets criteria of spatially consistent response.

The detailed white paper is the result of several years of research on the topic. Copies are available by contacting the EAW literature department by fax: +44 1494 538-091 or email litperson@eaw.com. The EAW website has a variety of technical information online, go to www.eaw.com.

Crew Retrenched at JPS

SYDNEY: Jands Production Services retrenched around 25 crew in August, following a softening of the touring and production markets. The move still leaves over 60

people employed at JPS, which runs from the same premises as major distribution firm Jands Electronics. Jands Electronics has recently expanded its staff.

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~ AGENCIES ~

• Audio and vision supply company **Audio Active Australia** have announced that is now the sole Australian distributor for Audio Technologies Incorporated, (ATI) a North American manufacturer of a large range of broadcast related products.
Call +61 3 9596 0501
URL: www.audioactive.com.au

• **Quest Electronics** have been appointed sole Australian distributor for Video Tech Designs, a UK firm who make high quality video mixers, titlers and editors.
Call +61 2 9477-3596.

• **Amber Technology** now represent N.E.A.R. all environment loudspeakers - outdoor friendly loudspeakers from the USA. It's a new range. Call +61 2 9975-1211.

~ PEOPLE ~

• **AWA Distribution** has appointed two new staff members

as part of a re-structure of their Pro Audio and Broadcast areas: Boris Mitchell joins AWA as Product Specialist - Broadcast Products and David Holmes is the new Product Specialist - Live Sound Products. Boris and David will be reporting to Alistair Dewar who is now Business Manager, Pro Audio & Broadcast Products.

• **Staging Connection's** Melbourne office has a new principle, Bill Kneebone who replaces Peter Kolevas. Bill is from Staging Connection's SA office.

• **Jands Electronics** are pleased to announce three new recruitments to the sales team: Pascal Bonnet - Account manager, Michael Papas - Sales Co-ordinator and George Petridis - Sales Representative.

~ CLARIFICATION ~

• Gearhouse Lighting would like to make it clear that they *do not*

own Clay Paky Mini Scan HPEs (*Connections August*). The items were mistakenly included on an inventory list supplied to us.

~ AUCTION ~

• **Troy Balance's** entire stock from audio gear to warehouse fittings and special production equipment will go under the hammer, Thursday 23rd October, 1997 at 11am, 9 Union St., South Melbourne. Details +61 3 9645 3333.

~ PRO WILL TALK ~

• **Kosmic Sound** have audio engineer Mike Stavrou in Perth for studio seminars this month....

#1 'The Digital Recording Studio - The Facts and the Fictions', at 3pm, and at 7pm on Monday October 20th,

#2 'Monitors, Microphones and Mixing - Principles and Techniques in Today's Studio',

Cost per seminar is \$39 (or \$70 for both). Contact Kristie Parsons +61 8 9242 3844 to book.

ENTECH sales fire up fast

SYDNEY: Six months out, the fourth ENTECH trade show is over 75% sold out, surprising the organisers. Run by Connections Publishing (*who publish this magazine*) the show will run next April 22 - 24 at the Sydney Exhibition Centre, in two halls totalling 10,000m² - the largest show yet.

"We are puzzled but delighted at demand, and think it may be in part because this is the last ENTECH until 2000" says organiser Caroline Grafton.

Audio Visual is a growing sector within ENTECH, which already has dedicated pro audio and lighting areas


Over 130 exhibitors and 5,500 trade visitors are anticipated.

• **Contact +61 2 9876-3530**

(very) useful
Catalogues

Pro Audio in Canberra have just produced their ninth catalogue, featuring 108 pages. They, like **Audio Telex**, know that a high quality catalogue is the only kind. Audio Telex have been doing theirs for many years. Also new this month is the MIDI bible, from **Moore Music**. This one is really good for picking apart the bits of MIDI technology which confuse us all. The Glossary is particularly useful. Back to Pro Audio - their catalogue is so good and so comprehensive that many music stores use it as a reference and price guide on their counter. Isn't that naughty?

Pro Audio: +61 2 6249-7766
Moore Music: +61 3 9419-0344
Audio Telex: +61 2 9647-1411



MAJOR TRADE SHOWS

- **LDI 97** October 24-26, Las Vegas. Ph. +1 212 229-2965
- **REPLitech Asia, new dates:** H K, Nov 5-7 Fax +1 914-328-2020
- **Vision & Audio 97,** Nov. 4-6, Earls Court, London.
- **SHOWBIZ EXPO,** November 13-15, Melbourne. Ph +61 2 9318-3806
- **NAMM 1998,** Jan 28 - Feb 1, LA Convention Centre. Ph. +1 619 438-8001
- **LUMINAIRE ASIA '98,** February 19-21, Singapore. Ph +65 431-2293
- **MUSIKMESSE,** March 11-15, Frankfurt. Fax. +49 69 7575 6433
- **SIB,** March 29-April 1, Rimini, Italy. Fax +39 541-711225
- **SHANGHAI PLASA,** April 14-16. +44 323 410-335
- **ENTECH 1998,** April 22-24, Sydney. Fax + 61 2 9876-5715
- **NSCA Expo '98,** April 27 - 29, Las Vegas. Fax +1 319 366-4164
- **AES 104th,** May 16-19, 1998. Amsterdam. Fax +1 212 682-0477.
- **LightFare International '98,** May 27-29, New York. Ph +1 404 220-2215
- **PALA,** July 17-19. Singapore. Ph +65 227-0688.
- **PLASA 1998,** Sept, London. Call +44 323 410-335
- **AES 105th,** Sept 26-29, 1998. San Francisco. Fax +1 212 682-0477.



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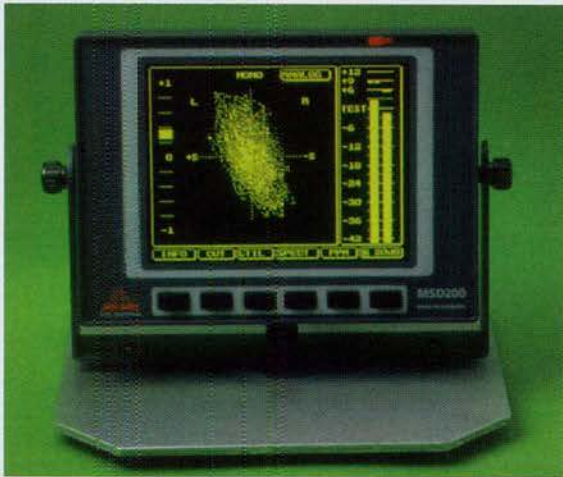
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New audio monitor

The new MSD200 Master Stereo Display from **DK-Audio** provides a marked increased level of awareness in audio monitoring. With its electroluminescent display offering a very high contrast ratio and viewing angle of 160°, its measurement readings are clearly visible even in the highest levels of ambient light and from extreme left and right angles. It is claimed to be most readable audio meter in the industry.

MSD200 combines three traditional metering functions in a single package.

It is a phasemeter, an audio vector oscilloscope and a level meter. In the latter operating mode it is fully equipped with several international scales with individually selectable reference levels and LED overload indicators.

The MSD200 is designed to operate in both analogue and digital (AES/EBU and SPDIF) input modes.

There is an optional real-time spectrum analyser package.

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February

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Studio Monitors, Flying gear

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1-800-635-514 or fax +61 2 9876-5715

DEALS

Where we advise you of permanent price reductions

◆ Yamaha advise the **SPX 990** effector has been reduced from A\$1995 to A\$1495 retail. See a Yamaha retailer.

◆ A & K Australasia say the **AstroBeam 330 DLP projector** which handles data and video projection can be yours for A\$8156 instead of A\$8900 (plus sales tax). To find out more call them on +61 2 9477-5709.

◆ F. Payton & Son are the **BBE Sonic Maximiser** people. They have adjusted a whole raft of things as follows:

383 Sonic Max. w/bass preamp, was A\$599 now A\$549;

386 Sonic Max. w/acoustic preamp was A\$599 now A\$549;

381 Sonic Max. w/guitar preamp was A\$599 now A\$549;

362 Sonic Maximizer was A\$530 now A\$499;

362 NR Sonic Maximizer was A\$699 now A\$649;

362SW Sonic Maximizer was A\$699 now A\$649;

461 Sonic Maximizer was A\$470 now A\$399;

462 Sonic Maximizer was A\$730 now A\$659;

862 Sonic Maximizer was A\$1,199 now A\$999.

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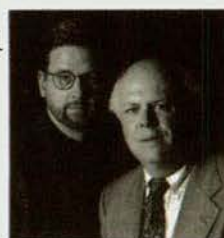
From now on, PA stands for Performance Audio

The truth is that most PA systems are not designed for live performance. They borrow cone drivers from instrument amps and crossovers from home hi-fi sets. They can't handle the power and they don't disperse the sound evenly. Basically, they're useless.

Linear Activation from EAW is not just another PA. It redefines the word.

LA offers a complete line of PA systems engineered by EAW - the world standard in professional touring sound. LA features the same professional cones and compression drivers, the same heavy-duty, computer designed crossover and the same road-proven construction techniques and materials. All designed to solve the specific problems of small-venue live performance.

You're a professional. Don't you deserve a professional PA? To find out more about a truly professional PA, call (03) 9415 1585 and request a copy of the Linear Activation Technology Brochure.



Kenton G. Forsythe, Exec. VP, Strategic Product Development (right), and Gary Hardesty, VP, Engineering, demand that EAW innovations use fundamental laws of acoustical physics in new ways.

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Theatre's dog days (from page 3)

But *Sunset* closing magnified to a greater extent the sudden glut of refurbished theatres in Melbourne and the fact that the majority of them were dark. And with those dark theatres there were even darker casts and crews out of work. The MEAA (Media Entertainment and Arts Alliance) states that unemployment within the industry is between 85 - 90% at any given time, but it is even higher at the moment.

While there may not be much in the way of work for technicians in long running shows at the moment, there is work in the festival and corporate theatre sectors. Many technicians and production people are staying afloat working on the growing number of cultural and community based festivals in Melbourne.

The Casino Effect

A spokesperson from the MEAA says casino culture has had a dramatic impact on the industry. It has been the introduction of gambling as a whole rather than the permanent casino in particular that has affected the industry. Gaming was introduced to Victoria in 1992.

It is the replacement of live entertainment venues with pokies clubs that has contributed to the drop in employment in the industry, especially in live technical work, as pubs and clubs changed from live music and comedy clubs to yet another pokies venue. Not only has the lack of employment been an issue, but also the loss of a training ground where many

young technicians have cut their teeth over the years working in a small scale live environment. Considering there are 557 gaming venues in Victoria as of August this year with a total of 26,104 gaming machines, it is no wonder the live scene has suffered.

In comparison to New South Wales which has had legal gaming for a longer time, Victoria did not cope well with the sudden introduction of gaming. In Sydney the entertainment scene has evolved with gambling as a factor, whereas in Melbourne it is almost in direct competition and proprietors are all too quick to jump on the band wagon making clubs into pokies, without considering the effect on the music and comedy scene.

The MEAA is also concerned about the growing number of productions being mounted under a profit share arrangement rather than direct employment of artistic and technical personnel.

Of course there is never enough money to see everything, and Melbourne audiences have had to choose between huge one-off spectacles such as the *Three Tenors* and the sellout national tour of *Riverdance*. Even the cost of tickets for sporting events has eaten into the entertainment scene as there is only a finite amount of entertainment dollars, and in a saturated market, that doesn't go far.

Perhaps there are too many seats to find bums for.

• Feedback invited, fax +61 2 9876 5715, email- mail@conpub.com.au

Singapore's concert scene (from page 3)

the English concert market are Sunvic and Lushington Entertainments.

Some of the more successful concerts held last year, such as the Alanis Morissette and Garbage concerts, were held at the World Trade Centre Harbour Pavilion, a smaller venue with a capacity of 4,000. This year, British band Suede and American rocker Sheryl Crow gave the most memorable shows at the same venue.

Music fans say they have also become more savvy when it comes to concerts. In the early '90s, when Singapore began to figure on the map for the bands and artistes on tour, people would pay prices as

high as \$200 for the best tickets.

Looking at the lineup of shows for the rest of the year, the English pop/rock concert scene does not seem as if it will ignite very soon. The high point of September was the *Legendary Ladies Of Rock* show which featured mostly latter-day members of '60s girl groups The Supremes, The Shirelles and The Crystals.

The Irish boy group Boyzone and middle-of-the-road balladeers David Gates and Bread are also playing in the same month. Things will pick up soon after with Britpop group Blur and California's No Doubt this month.

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Audix D4



The D4 is the latest addition to the Audix D-series of instrument microphones. Typical applications include kick drum, timpani, toms, piano, sax and other instruments requiring low frequency response.

It utilises a new capsule specially designed to capture high SPL instruments with extended frequencies below 100Hz. By employing sub-impulse technology that samples sounds higher than the usual rate, the D4 captures a truer image of the original sound than previous generation kick drum mics, says Audix.

The mic is flat down to 63Hz, with a slight bump in response at 80Hz and a gentle roll off below 40Hz. From 80Hz to 1K, the D4 is extremely linear. Also introduced by Audix is the OM-6 hypercardioid dynamic microphone which offers off-axis rejection characteristics with a wide frequency response. It has a low frequency extension normally found in expensive condenser vocal microphones.

D4 - A\$449

Contact: Production Audio Services, +61 3 9415 1585.

AM Loop Amplifiers



KLa1 induction loop amplifier

Wireless Power

CMC Music have announced the release of the AMC-2A Ni-Cad Battery Charging Station. Suitable for the Azden UHF wireless microphone range, the AMC-2A overcomes the irritating aspect of using wireless systems—changing batteries.

The Azden 41HT UHF handheld transmitter has a metal plate at its base and when it is fitted with the Azden Ni-Cad battery it can be charged simply by placing the complete handheld transmitter in the AMC-2A charger.

The charger drains the battery before commencing charging.

- A\$195 inc. tax.
- CMC Music +61 2 9905 2511.

Specialised but often required in larger venues, induction loop amplifiers power wire loops that provide audio transmission for the hearing impaired. Another application for induction loops is translation systems. The loops are often built into a venue, beneath the floor surface.

Australian Monitor have released two amplifier models - KLa1 and KLa2 which provide single channel constant current output.

Driving either 6 or 12 amp current output, they can power small to large sized loops. AM say that a loop typically exhibits low impedance at low frequencies, but rises in impedance as the frequency rises.

A technical paper from Australian Monitor explains effectively the theory and design principles required for a successful induction loop installation.

Call them on +61 2 9874-9355 for a copy.

Motionworks Sony Controller

This is a hand held remote controller for all serial tape machines, VTRs, DAT recorders and digital audio/video workstations conforming to the Sony P2 protocol. On connection to the R2P2 (pictured at right), machines are immediately identified in the 20 x 2 supertwist LCD from an on-board library of over 140 devices. You can update the library from Motionworks' website.

Once a machine has been identified, all the R2P2's function keys and internal menus are automatically configured for the machine connected. A jog/shuttle wheel is provided along with transport keys and there are also cursor and numeric keys.

Also available is the Motionworker 5 machine control.

• Priced at \$1995, from AWA - +61 2 9898-7744



New ADAT is M2

The high end ADAT type machine formally known by its code name, "Meridian", is now called the M20. It is a 20-bit ADAT Type II-Format Recorder.

It records eight tracks of true, linear 20-bit digital audio onto tape without using external converters or multiplexers. 16-bit ADAT tapes are compatible.

A full preview of the M20 appeared in the May issue of Connections, see it and read online at our netsite www.conpub.com.au

• More from Electric Factory, +61 3 9480 5988

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Changing Days of Troy

Melbourne audio firm Troy Balance to sell as the Troy brothers move to next challenge. By Julius Grafton

Selling a successful business depends on finding someone with enough money to buy it. Early in the 1980's Barratt Lighting, a large Sydney lighting production company was sold piecemeal - instead of as a going concern. Later in the 1980's your writer faced the same situation, announced a breakup sale of the Graftons Lighting business, but then found a buyer for the whole concern as a consequence. It trades on today.

Last year The PA People sold their concert production business in parts, but of course kept their main business intact.

Peter Troy is keen that the impending sale of Troy Balance Corporation be seen in the correct context, and I know how he feels. "In the past four years I've made more profit than ever - but my heart is not in it anymore" he told me at his South Melbourne base. The assets go to auction later this month, with the business to be broken down to suit buyers.

Troy Balance is one of the live sound pioneer firms in Australia. It started when the brothers Trojkovic -Peter, Drago and Luke- expanded their music shop from Geelong in the early 1970's. Troy House of Music opened a rental business, Peter found himself sending double 4-way PA's on hire to all corners of the country as the rock music boom erupted in the late 1970's. Troy Sound Reinforcements rode the wave that saw local bands working every night of the week, with literally hundreds of shows each night in every major town.

A partnership with Balance Sound in the early 1980's brought some serious expertise in major production audio into the fold. Ernie Rose, Adrian Smith and Grant Walsh were (and still are) respected engineers, Peter Troy approached Balance and the firms merged. Balance had lucrative contracts with The Little River Band and operated a studio outboard rental business. These days the studio outboard business is redundant with few music recording studios surviving the changes of recent years.

"Most people in this business (pro audio) came into it because of their love of it", says Peter. Troy Balance invested heavily including purchase of a Meyer MSL-3 based speaker system that is still current and in demand today.

The recession came and the work slowed, revenue dropped 40% across a 12 month period. "We got through it, but in the 1980's we were geared very heavily, we had two years of really tightening up and then we came up with the new company policy of not borrowing".

The work today has changed too, now it's one-off sound reinforcement, where a show takes days to prepare but the show is often a product launch or something sterile like a convention. A far cry from tours and bands. The challenge has gone out of it for Peter. "I find

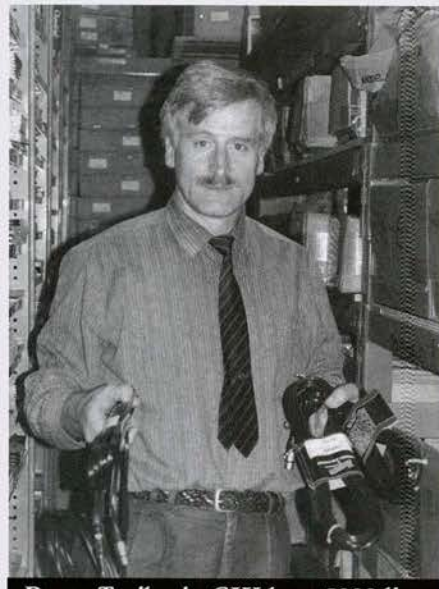
myself going through last years diary to call people to get this years work. It never used to be like that in the 1980's - we never knew what was around the corner. That was what made it exciting".

Four years ago Troy almost sold out, following the recession, which hit hardest in Melbourne, and the loss of a major account, John Farnham. "The recession reduced the quality of the work out there. A band was prepared to pay the extra for a Meyer system - but now the cost is everything. We maintained our pricing throughout. It was an active decision to do less work for the same money, it reduced our overheads".

The business was offered to the highest offer but again, one cashed up buyer was elusive. Peter decided to stay in business.

Some months ago several people in the industry negotiated to buy Troy Balance, but the deal stalled because they couldn't find the money to pay the agreed price. Peter had already planned his next move, so the decision to quit the business had been taken.

Troy Balance operates a large concert production system, with 64 Meyer MSL-3's. 42 Meyer subs, and flying equipment. They have



Drago Trojkovic: CMI have 5000 lines

32 EV Deltamax speakers, 123 Yamaha and 31 QSC power amps, Midas and Yamaha mixers, and all the paraphernalia and cabling that goes into major audio production.

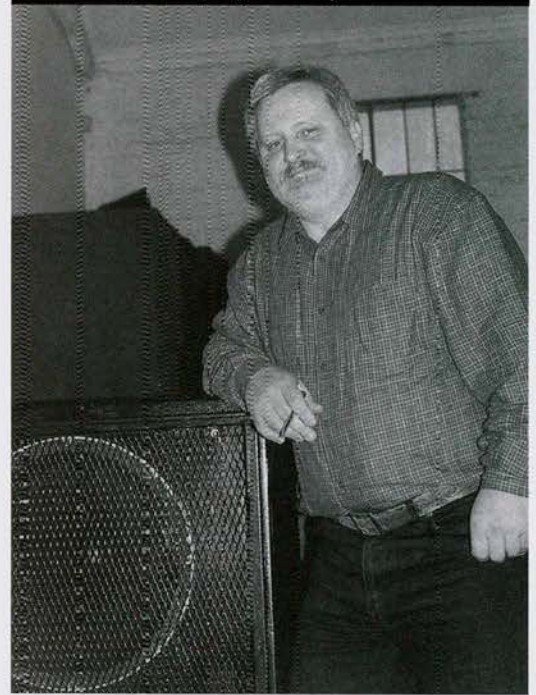
The rest of the business will be sold possibly as a going concern- it comprises a 'drive-way hire' business, three rehearsal studios, and a pro audio sales division run by Richard Hallem.

•••

So what next for Peter Troy?

It became obvious to Peter and Drago (who runs Central Musical Instruments) that Pe-

Peter Trojkovic prepares to farewell the PAs



ter's pro audio background and experience would fit naturally into CMI. CMI is a very successful musical instruments (MI) distributor, with over 5,000 stock lines. Most of CMI's business is low-end, guitars drums and accessories. However in recent years it has started to distribute quality audio lines like Digitech and DOD, and cables and stands from Proel. These lines have grown, to the extent CMI were named international distributor of the year by DOD- Digitech.

CMI have over 400 retail music store accounts, they deal with virtually every store in Australia. They sub-distribute gaff tape, TDK tapes, Alcatel connectors and Shure microphones, so as to offer a store a wide range of products. From cables to strings to straps to low cost speaker boxes, locally assembled.

Peter and Drago are coy about what will eventuate, but it's obvious the CMI infrastructure can distribute additional product lines at low cost. Peter can provide the pro audio savvy to back up new 'high tech' pro audio lines.

CMI itself has grown as a business by at least 10% each year, built on a philosophy of supporting those 400+ retailers and supplying as much of their needs as possible. This requires a lot of attention to detail, the effort involved in stocking so many lines and remaining competitive is immense.

When I called on CMI the background noise in the office was a printer working non-stop to produce shipping notes, a phone system running hot with calls, and a barrage of fax machines popping out orders. In Drago's office are piles of printouts. He knows what he is selling and at what price to whom. He knows if the product is competitive and if it isn't he seems to know what to do about it and where to get it.

"There is a big world out there, the world is changing and you have to change with it" says Peter Troy.

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LETTERS

*#//@%XX -?!

Review Payola?

Bravo for your product reviews! I appreciate the effort you go to, and when you profile the person using the product it makes the review believable. But one comment. I noticed your statement in June where you said that trade magazines will do anything to sell an advertisement, and that you are often asked to review a product in exchange for an advert. Better still you promised that the answer always is NO, and that you would rather go broke. Then in the September magazine there is a whole page Otari advertisement immediately opposite the review of the Otari PD-80. Did you broke your own promise, or are you going broke?

• **Fran Atkinson, Maryborough Qld.**

* We are not broke quite yet. You may not believe this but the ad placement was purely coincidental and not a condition. The distributor of Otari is Amber Technology, whose marketing director is not only very fair in dealing with us, but also professional enough not to try to twist for a deal we wouldn't do anyway. It could be argued that given your reaction the ad placement is possible detrimental if it is right up against a review. -Ed

How Loud?

In response to Michael Orland's article "How Loud is Loud" (September) I would like to point out that to double the perceived loudness of a PA you may only need 10dB of boost, (this depending greatly on the system being used) but to actually double the SPL of a system, it requires something more. For example, a Bose 802 needs about 50w to produce 110dB @ 1m (the same SPL in Michael's article) however to double the SPL to 220dB it would require an input of about 5,000,000,000,000 watts or 100 billion times the amplifiers output. (Not a happy prospect for the speaker's drivers!)

However if you were to double the amp's output the input would only need a 3dB increase. Please see photographs demonstrating this. (At right)

• **Ben Armstrong, Picton, NSW.**

Rainbow Defended

In the August Connections Magazine you reviewed the Colourset Colour changer. In this article your reviewer claims "a system which counts revolutions to know where it is, like the Rainbow scroller does, is quite often prone to inaccuracies when the scrolls get old and dirty."

We reject the contention that Rainbows are any more prone to this problem than the many systems using metal labels stuck on the scroll. Indeed labels have been known to fall off, and sensors fail due to dirt.

Every night there are over 2,000 Rainbows working reliably on Shows in the West End alone.

I would like to invite your readers to check out the latest scrollers from Rainbow which we demonstrated in Brisbane, Sydney and Melbourne early last month. Once again they have set the standard with front access, auto scroll load, remote calibration from the board etc. Contact your Selecon dealer who will arrange for a trial.

• **Jeremy Collins Selecon, NZ.**



Good Enough

Love the reviews, and admire how you resisted doing them for over four years. The thing I like best about Connections is how you move with the times and track with accuracy this industry I work in. I saw and recognised your commentary about the decline of the recording studio at the time, and now completely agree with your slant towards corporate theatre and audio visual. Most of my peer

Letter of the month

Personal Little soapbox

Just a quick note to let you know how much I enjoy your magazine, everything from the serious articles to things like Dunc's page and Rough Riders. Everything that is, except your childish little jibes at people. EG:

- the AES,

- your former employee,

- the Showbiz Expo's receipt

of government funding, and you not.

Please Julius, don't use an otherwise great magazine (to which I have subscribed for two years) as your own personal little soapbox to whinge from.

Congratulations again on your publication.

• **Tim Bowen, Thornbury, VIC.**

☐ Tim wins an extra year on his subscription

group either work mostly in corporate or have left the industry. Ten years ago I was a live sound engineer for bands, like your editor was. I even worked with him once, when he had more hair!

• **Bob Norton, Lake Munmorah NSW.**

Sheila returns!

Having suffered in silence for too long, I must protest your editors sexism is still rampant and unchecked. Observe page 9 (September) where he imposes a photo of Caroline Grafton on readers who otherwise are hungry for trade information. At the top of the page is Ms Fender who 'gives scale and grace'. Turn the page and observe the Korn Groupie. I would have thought that Connections would move with the

times not against them.

• **Shiela Yates, Glebe.**

* Caroline Grafton, co-publisher, replies: Gee Sheila you think that's sexist. You should have been at PLASA 1997 in September. A major UK manufacturer ended one particular exhibition day with a special viewing of a well known London stripper who performed admirably extracting an Australian distributor from the audience who was disrobed and very well lubed. Really, Sheila - give us a break. It's all just good fun. (We are considering a male stripper at ENTECH) We've been despondent over the past few years, ever since Ms Yates cancelled her subscription. But we triumph, because obviously she BUYS this magazine at a newsagent! In the hope MORE smoking flame mail, like we were accustomed to in the old days, will arrive from this obviously committed reader, we have activated a FREE subscription to Ms. Yates, effective today. Far be it for us to stereotype Ms Yates, but rarely has the professional theatre industry produced a better critic - and thus a valued Connections reader!

Meyer Not Fullrange

Interesting review of the MSL 4, (September) but surely call a spade a shovel and do us a favour. The MSL 4 with a 12" driver couldn't possibly be a 'full range' box as you claim.

• **Greg Walker, Edgecliff NSW**

* I said "...adding a sub woofer is an option for more bass reproduction". If it's voice reproduction you need, then the MSL-4 is a full range box. -Ed

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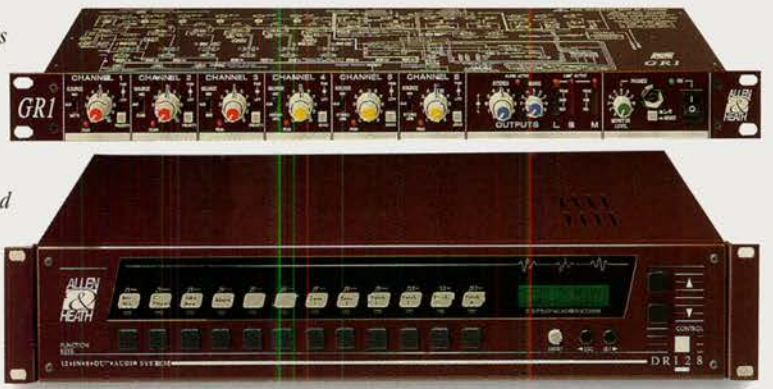
Note: letters must be for publication in Connections only, and contact details must be supplied even if letter is under a non deplume.

GR1 "I don't know of anything on the market that does what this unit will do."

Richard Simonton - Island Systems & Design

DR128 - New for '97 and a "first" for installers. This Digital Mix Processor combines mix, gain, gates, levels, compressors, EQs and more - all in a stylish 2U box.

12 inputs and 8 outputs are configured as a cross point mix matrix for ultimate flexibility. PC setup software included.

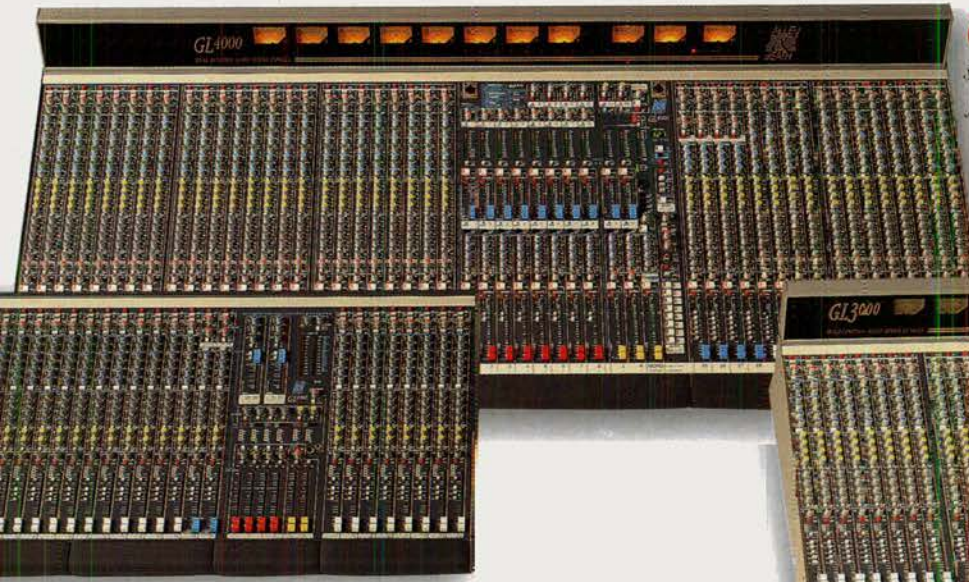


This

... is an advertisement for Allen & Heath mixers - with real people giving their opinions.

The aim is to show you what we make - and for you to decide that you could really use any one of the great mixers we produce.

Then we hope you'll buy it, simple really. Perhaps we ought to mention that we've been at the cutting edge of mixing technology for over 25 years - which might explain why we're rather good at it. Most importantly, our mixers sound superb, they're built to last and they've got all the best bits of modern technology. So which one would you like?



GL4000 "I thought it would be around the \$50,000 - \$60,000 range. I am blown away by all the features, especially the stereo channel's dual purpose (If I use it as a mic or line input, I can still use the stereo inputs as an effects return). Unbelievable at the price!"

Tim Westorf



GL2000 "Even with just a few hours experience I was instinctively reaching for the correct controls"

Mike Sokol

GL3000 "For their features, I'm surprised that Allen & Heath doesn't charge more than they do for these consoles"

Armando Fullwood - Audio Ethics

MixWizard Series

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WZ20:8:2

WZ16:2



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Six weeks in Telstra Hell

How two firms coped without phones

Funny how competition enhances service. Telstra project a 'can do' facade but recently failed two Sydney firms in a sensational manner. And there is no recourse.

Intercity Gearhouse moved across Sydney in August, and ordered 16 phone lines. They had one, a week after the move. Connections moved to within a few doors of our original home and requested 9 lines. We got 2.

Outside the new Connections pad are two overhead cable TV coaxial cables. Telstra promote theirs as offering Big Pond internet cable modems. Optus promote theirs as offering local call services as well as cable TV. In both cases anything other than cable TV is "unavailable at this time in the area". When will they be available? "No current time frame".

Cable Count

Meanwhile walking the two kilometres from our old offices to the new, I counted nine homes connected to cable TV. There are two cables strung two kilometres, useless almost.

Our problem is lack of main cable capacity from the exchange, which is slated to be upgraded sometime eight to ten weeks after we moved. We weren't told about this when we first inquired with Telstra and ordered the lines, five weeks before the move. Ten days prior to moving I called the sales office to check that linesmen were in fact booked. 'Yes, they come out two days before the move' I was told. 'Yes, the numbers are

available at the exchange'. I was uneasy.

Two days prior to the move the cheery young woman in Sales was on the line to explain that only two lines were in fact available. Telstra would provide a 'wired mobile solution' to tide us over. As we live a few doors from the new place I suggested we sacrifice our two home lines to the office, to give us four lines.

A barrage of calls to Telstra were made over the next few days, but it was moving day before a linesman arrived and he talked about booking a trench digger to get the cable into the place some day soon. We were cut off from the world.

Duress and Shovels

Under all the duress we could apply, the linesman returned with two workmates and actually dug the cable trench. They sweated and tunnelled under the pathway, and put the cable into the place. We swear, his shovel came out of a carton, fresh and unused!

It was late the following day before we had two lines connected to our fax, after they had inadvertently been wrongly hooked up to the Commander by the linesman. These were using our two home lines, which run past the front door. Still no sign of the two originally promised lines.

The 'wired mobile solution' meanwhile was causing alternate hilarity then suicidal tendencies. This 'solution' arrived in a box on moving day and was revealed as nothing more than five mobile

phones. "I've arranged for the exchange to divert your main number to the first mobile" explained Sunshine Girl From Sales. "You can then divert the first mobile to the second, the second to the third, and so on. So callers got the 'this call is to be diverted to another number' message.

It was a whole week after the move before the two originally promised lines materialised, giving us a very basic service, without modems and - probably to the relief of our advertisers - without faxstream.

So far we've had six technicians visit, and spoken with a further six at various places in the street outside who have been tracking down some working lines. The system within Telstra apparently sends instructions to the exchange, the lines department and the responsible installation technicians when you book a job. In our case because the lines were not available, the order was 'held'.

The Main Problem at Telstra

This is where the system falls over, because our sole contact point (and yours too) is the Sales number - 132000. It is staffed from 8am to 6pm, Monday through Friday. The lines department is under no obligation apparently to advise Sales if it cannot connect a service. Furthermore it is also under no obligation to talk to the customer. Sales also has trouble talking to 'Lines'. Messages are left, there is no fast contact point.

When I called various Techni-

cians on their analogue mobiles, they would all uniformly answer "welcome to Telstra, Joe (or Bill or Trev) speaking..." Pretty well universally these troops on the front line were doing what management told them to do, using the buzz phrases as instructed and trying to get things moving for us. They also tell me the lines and faults business is going to be subcontracted out, and that they are horribly understaffed.

One explained his bewilderment at the current state of play: "We were well into fibre optic technology when the cable TV co-ax was imposed on us. It won't do half the things a fibre optic cable will do, and the cable mains in most streets are up to forty years old".

Some observations:-

- Cable TV co-ax wires can't yet deliver any additional services,
- Street multipair wiring networks are overloaded,
- Telstra don't seem to hire female Technicians,
- Don't assume your move will progress smoothly just because someone says it will!

Postscript - by way of compensation we have had two letters from Telstra explaining the delay as due to cable capacity problems. They have credited the mobile phone accounts by \$300, and waived one months Commander system rental \$270.

But no apology; apparently it is a standing legal direction that the corporation is never wrong.



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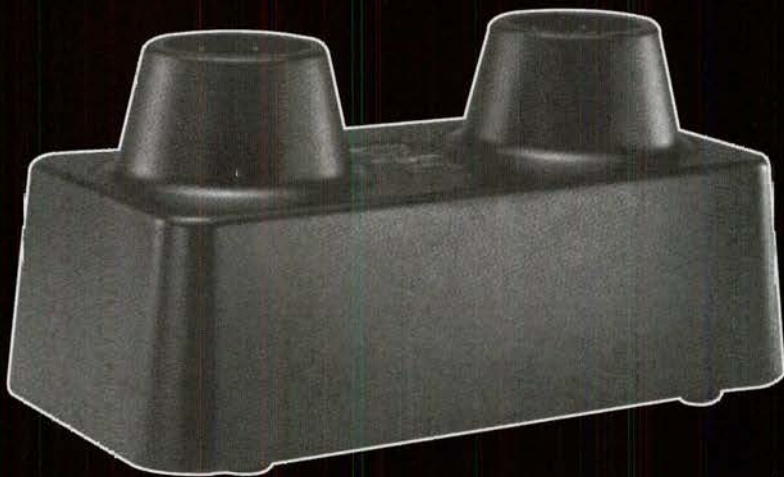
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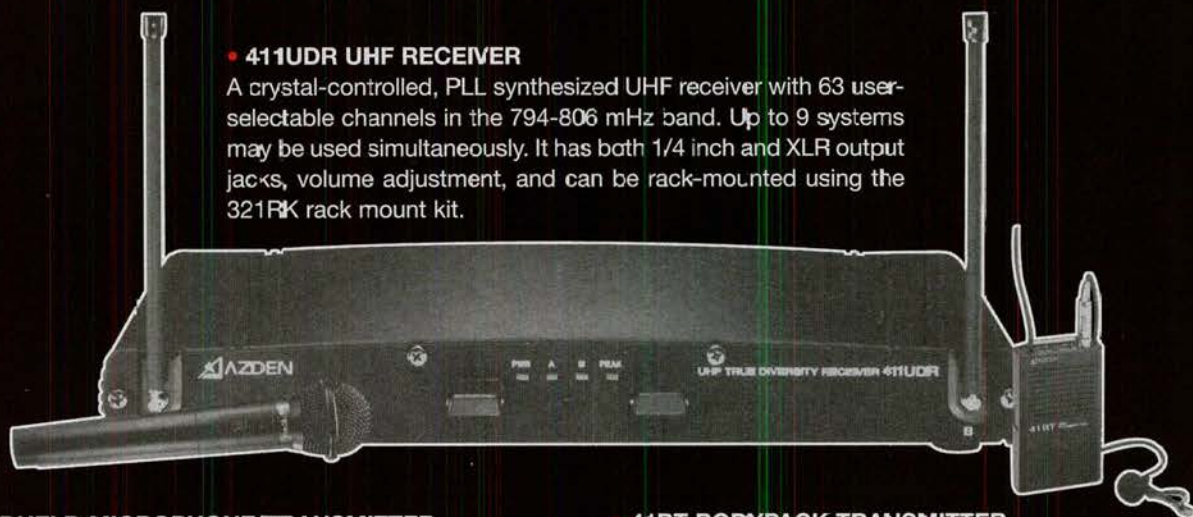


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- **AMC-2A Ni-Cad BATTERY CHARGING STATION** makes your 41HT the only rechargeable UHF microphone available.
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Suitable for Azden model AN-1A Ni-Cad batteries only.



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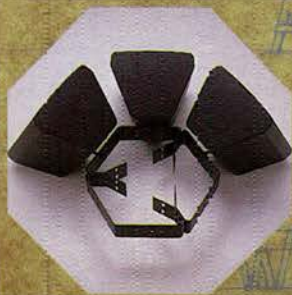
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The Control Contractor Series. Quite possibly the most significant advance in sound contractor's tools since the fishtape.



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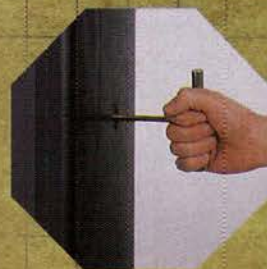


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Dataton Control Systems

System integration using an open platform instead of firmware, with impressive user interface options

By Julius Crafton

For some years now system integrators have chosen AMX or Crestron systems where many diverse devices have required one controller. Recently Command Systems and Dataton have become more prominent on the scene.

Dataton are kings where very integrated show control is required-like in the Audio Visual business. It stems from their origins in Sweden where some time ago the founder needed to remote control a slide projector using a MIDI note. Today Dataton are keen to be seen as a control solution for installations as well.

The product approach is not dissimilar to their competitors, except that Dataton offer their Trax software free. At this time it will only run on Mac, but there are heavy hints from Sweden that a Windows version is near. Whereas the others all feature 'firmware', meaning they need a processor in a control panel or a rack box, Dataton just needs a Mac. Even if only a basic powerbook, for each installation.

Dataton prefer to refer to the computer as a Trax Processor, and even onsell a Mac powerbook as such, at around \$2400.

BASIC SYSTEM

A basic system starts with a Trax Processor loaded with Dataton's Trax software. To get to control of your devices, whatever they may be, you need at least one Dataton SmartPax. This is a modem sized device which will connect with up to four different things. The SmartPax connects to your Mac, using a Dataton cable. From the SmartPax to each device (or 'thing') is another Dataton cable, known as a Smartlink, built for the task.

The standard menu of 'things' that can be connected reads like an AV department stocktake or shopping list. Currently it is as diverse as:- Barco video projectors, Bytecraft dimmers, 360 Systems Digidart, Kodak projectors, Pulsar Masterpiece desks, Ramsa audio processors, Pioneer laser disks, High End Systems Cyberlights - and so on. Most commonly used devices are system ready to 'plug and play'. Crucially you can establish new device drivers as required, which makes the system kind of recyclable.

The SmartPax is truly the hardware heart of a Dataton system. A device driver for each thing to be driven is downloaded from the Mac when you configure your show on Trax software. The driver remains resident in the SmartPax, even if powered down. Until you overwrite it.

More SmartPax can be looped from the first, usually a bus controls 15 SmartPax, each with four ports, but there are ways to control many more.



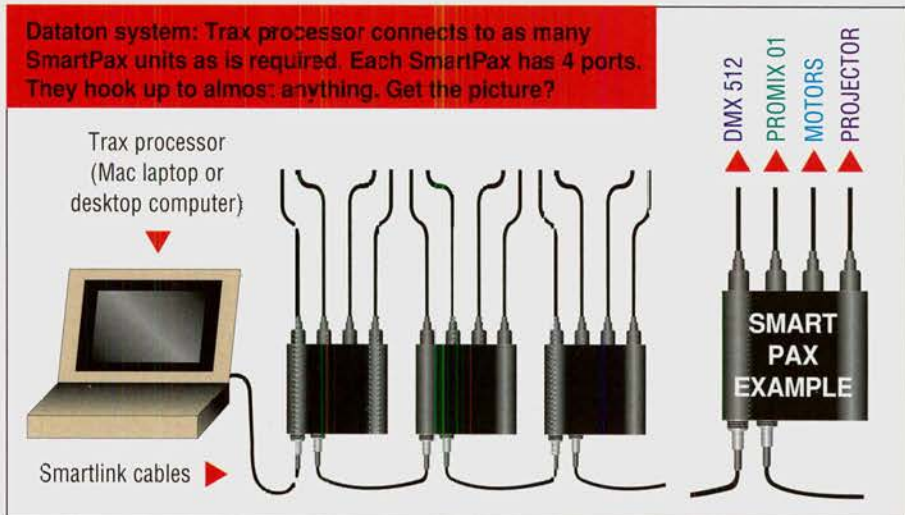
IN USE

Imagine you have one SmartPax connected to your Mac by wire or by modem. The first channel could address and thus operate a Yamaha ProMix 01 audio mixer. Channel two might connect to a Pioneer laser disk player, channel three a Whole Hog lighting desk, and channel four might just give me a midi output.

Trax, in addition to standard 'task list' programming, also gives you a timeline, into which you drop devices and functions. A typical time line might start with a dimming command in DMX 512 to your dimmer, trigger a switch closure to drop a video screen, fade up channel one on a Yamaha Pro Mix 01 mixer, apply EQ and reverb from the same mixer, then fire track 7 on a laser disk.

The complexity of the timeline and the commands nested beneath each device are just a matter of programming. Being Mac based this isn't too hard, mind you as a Mac user I've not seen an application as complex as Trax. There is a nice balance between user programmable and Expert Required. For example if your device driver isn't available ex-stock, a programmer (Dataton call them 'Wizards') can 'script' the jumbo that'll drive a device.

(continued next page)



ConArt

Dataton

But if it's a simple routine, I could possibly do it myself. Maybe.

So this all tends to confirm the products origins, and that its happy to drive live shows. But the installation possibilities are very open because of the variety of control interfaces that are possible.

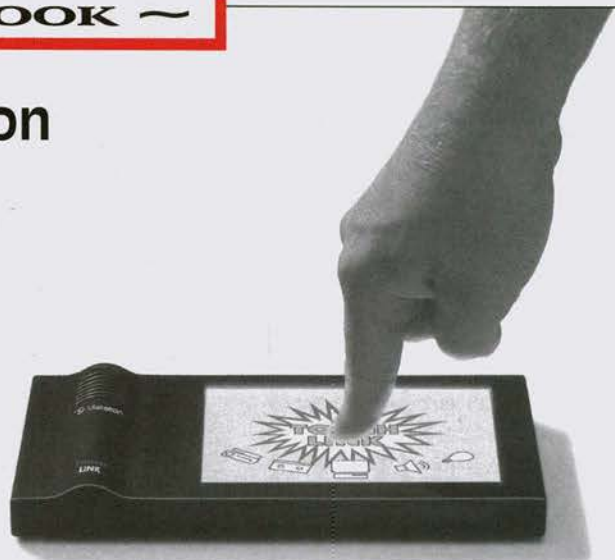
THINGS THAT CONNECT

The SmartPax QC (Quick Configure) is the latest model, backward compatible with the original SmartPax. You buy these from Dataton, and you then need to buy the Smartlink cables to go from the four device outputs on each SmartPax to your various devices.

Naturally there is a long, long list of different Smartlink adaptor cables, each called SmartLink something or rather. Like RS422 Smartlink, or Tascam Smartlink.

A SmartPax needs system power or a power source.

Dataton have a myriad of ancilliary devices which make life



Touchlink, colour touchscreen which can be placed almost anywhere, and plugged into one port on a SmartPax.

Supporting text for a Dataton device driver

It's helpful, because you are TOLD how to setup your device for remote control from Dataton Trax.

Device: Level, Type: **Yamaha:ProMix 01**

Capabilities and Features

Audio mixer with 16 mono inputs, 1 stereo input, 2 send, 2 return, 50 scene memories, master volume control, and motorized faders.

SMARTLINK: 3470 MIDI

Device Settings

In order to make the driver work properly the mixers MIDI setup must be set to factory default settings.

To setup the mixers MIDI setup to factory default follow the following steps:

1. Press the MIDI button.
2. Use cursor keys and select MIDI SETUP.
3. Press enter.
4. Select "Rx Ch" using cursor keys.
5. Use parameter shuttle and set "Rx Ch" to 1.
6. Select "PROGRAM RX" using cursor keys.
7. Set "PROGRAM RX" to "ON" using parameter shuttle.
8. Select "CONTROL RX" using cursor keys.
9. Set "CONTROL RX" to "ON" using parameter shuttle.
10. Press MIDI .
11. Select "CONTROL CHANGE ASSIGN" using cursor keys.
12. Press enflter.

Supported Cues

Set/Fade

Programming Notes

Create one Level device per channel or function, all using the same main address.

Sub-address 1-16: Mono inputs

Sub-address 17: Stereo input

Sub-address 18: RNT 1/RTN 2/SEND 3/ SEND 4 Depending on mixer configuration.

Sub-address 19: Master volume

Sub-address 20: Memory recall, only levels 0-50 are valid, using one percentage step for each memory position.

Use Set/Fade cues to set or fade the output level on each channel. Use a Set/Fade cue on the Level device with sub-address 20 to recall a memory stored in the mixer. Note that this memory can only be used to set parameters not directly controlled by the driver.

Driver File: Dataton TRAX Driver Version: 5

easy. One is the Digital Smartlink, which has 32 outputs for interface with relays, dc motors, incandescent lamps, switches or anything suchlike. Understanding this means you will realise that with the Digital Smartlink connected to one output of a SmartPax QC, there are obviously 32 sub-addresses on the device driver in Trax software.

So just because something is plugged into a SmartPax, do not assume that the software has but one channel of control available for it. Take for example the Yamaha ProMix 01 mixer. You can fade each of the 16 mono, 1 stereo and return channels - and address memories, all from one device driver. (See sidebox for a complete text description that Dataton helpfully provide within the ProMix 01 device driver).

SOFTWARE CONTROL

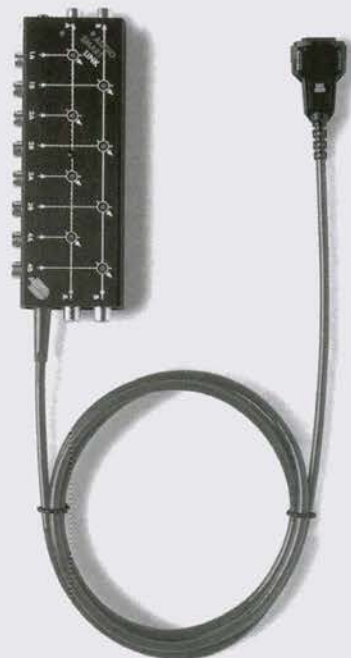
The limits on what Trax will do go fairly deep. For instance a timeline can be as long as 23 hours, 59 minutes and 59 seconds, or as short as you like. You can have a bunch of timelines all stacked up on screen, not because you need to, just because it's neater that way!

There is often more than one way to do things in Trax.

If a device isn't supported on the list of 500 or so things that are, you can write the driver for the device on your own - if you know about what the baud rate is, and how to address the thing. Myself I would pay a local Wizard to write or send me the device driver by email!

The timeline has your cues, like Locate, Dissolve, Trigger, Flash, Wipe, Set/Fade and so on, placed exactly where you want them to occur or start. You can move them, cut them, paste them, and link them to different devices. This is really easy.

Devices are popped onto the Device window, and include generally grouped



Audic Smartlink, 8 in, 2 out audio mixer which is addressed from one port of a SmartPax.

Is this your microphone?



CK 77-3 Miniature lapel microphone
Winner of 1995 Austrian Chamber of Commerce Merkur Award

Maybe it's this...



C 391B Studio microphone from modular Blue Line series

C 3000 Studio microphone.
Winner, 1996 ENTECH Award for
Technical Brilliance



or this?

Well, how about...

C 568B
Shotgun microphone



WMS 300 Wireless
microphone system

...either of these?

D 230 Omni interview
microphone



...or any one of over 100 other microphones in our range.

There's an AKG microphone to suit every recording, broadcast or live performance application.

In fact, the only difficult thing about using AKG equipment is deciding which of our many microphones best suits your need.

As our award-winning range includes everything from miniature lapel microphones like the CK 77-3 (shown above) to the C 12VR vintage valve microphone, the choices might seem endless.

To help you make your selection, AKG stockists will be happy to supply you with both friendly advice and full range brochures (complete with specifications and handy recording hints).

For the location of your nearest AKG stockist, call 1-800 252 391.



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~ FIRST LOOK ~

Dataton

things like Switch, Audio Disk, Lamp, Serial, IR, and New - virtual or actual devices you make yourself.

Double click on a device and you get a command box which has sub levels of information and control. You can see the status of a device onscreen if desired. And there is a lot more.

USER INTERFACE

A hackneyed term. There are ways and ways to control Trax. If you have a museum or place where users need to be interactive, they can of course be treading on pressure switches and walking through IR beams. Or they can touch a touch screen, which is the common first place most users have encountered a Crestron or AMX system.

The Dataton approach lets you put a touchscreen anywhere within cable distance of a SmartPax, with the touchscreen being just another Device. Or 'Thing', in Connections-speak.

You can make a groovy control surface on your Mac. You can buy a third party touch panel from Honeywell or someone. This CAN be where a Dataton system cuts serious dollars off a competitive system where -like AMX- you are strapped to their hardware.

On the other hand, the alternative system from AMX or others relies on a 'firmware' control device, being a specific touch screen based processor or pre-programmed rack mount unit. They do not require that a Mac or PC be booted up to run the installation.

Some people may be put off at having a computer running an installation, but of course it can be hidden away and 'blind', with touch screen or hard switch system controls programmed for staff or technicians to use. And the elegance of the Trax interface makes the computer your friend, because a show can be programmed on a laptop en-route, or remotely them modem'ed into the system.

TELLING WORDS

Putting this story together I went to Dataton's Australian HQ in Sydney, where the urbane Ross Parker did a presentation for myself and three representatives from several Major Other System Users.

I watched as a major AMX user who, wisely perhaps, prefers to be UnNamed, put Dataton and Ross Parker through the hoops. He came in cynical and with considerable investment in AMX. These are some of his comments:

"It's gorgeous! The timeline is great, running to timecode in AMX is a dog. It's learnable, and graphics driven".

The other people in the room all nodded, myself included.

Dataton has featured in major Australian installations at Crown Casino and Segaworld to name but two. Several Wizards have been trained, serious Wizard school starts on October 12, and monthly (free) 6 hour familiarisation courses are held in Melbourne and Sydney.

Dataton Australia, call +61 2 9416-6555

Dataton Singapore, call +65 275-9633.

- **Prices:** Trax software is free from www.dataton.com
- Trax Processor: (A standard Laptop Mac) A\$2400
 - SmartPax QC A\$3986
- Digital SmartLink A\$1509, Audio SmartLink A\$1328
- Analog SmartLink A\$1954, RS 422 SmartLink A\$181
- There are many options and SmartLinks, these are a random assortment only.

Writer thanks Serena McClelland and Ross Parker for assistance.

How do you improve the world's best selling power amp?

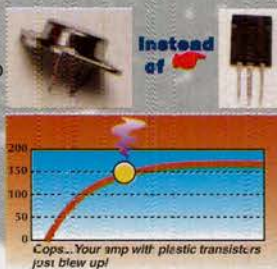
Popular wisdom says 'don't change the recipe when you're making good biscuits.' The reason the CS800 has remained dominant for over twenty years is that we've only changed it a few times and when we did, we knew what to throw out and what to keep.

What to Keep

The new CS800S uses metal (TO-3) power transistors, because plastic devices just don't deliver equivalent thermal performance.

While metal devices can be used right up to silicon junction failure, plastic devices degrade 50°C (90°F) sooner. This margin of "thermal headroom"

can be the difference between a really loud finale and something more final.



Books have been written about thermal management, but it all boils down to three things: air flow, heat sink area, and ΔT (the difference between the heat radiator and ambient air). The CS800S uses a unique "parallel flow" heat sink alignment so every transistor receives the same cool temperature air for optimum ΔT .

With two variable-speed 52 CFM fans cooling hundreds of square inches of heat sink area, and metal (TO-3) power devices (in the air stream), the CS800S will play very loud for very long (years - not minutes or seconds).

The audio amplifier section uses proven Class A/B ultra-linear complementary topology with several improvements that further reduce the distortion/noise floor even lower than the already "audiophile quality" CS800X (40 v/ μ sec, <0.03% thd, e.c.)

Very carefully!

Our exclusive output circuit design (patents pending) completely compensates for amplifier output impedance. We conservatively spec damping factor at 1000 but it is only limited by component tolerance.

Modular inputs and outputs provide flexibility in configuring the CS800S for your application. Banding post, or Speaker outputs, it's your call. A clever input circuit accepts anything from XLR balanced line level signals to single-ended speaker level signals. Caution: don't try this with a non-CS amplifier; speaker level input signals will fry most amps on the market today!

Plug-in crossover module: One of the benefits of 30+ years making sound systems is being able to look beyond textbook filter solutions for speaker crossovers. When you have intimate knowledge of how the drivers act and interact you can correct much of their non-ideal performance. While a flat response filter looks good on paper, flat combined response out of the speaker sounds good, in this case, we choose to sound good rather than look good.

Note: we have other plug-in modules under development.



DDT™ - A fast-acting limiter, triggered by clipping or current limiting, which prevents speaker/equipment damage, is probably our most copied feature. Only Peavey Electronics offers true DDT. (U.S. Patent #4,318,053)

A funny thing happened on the way to Beta Test. Over the years, we've learned to test new designs in the "real world." Prior to releasing the new CS800S, we sent beta test units to England, South America, Australia, and around the U.S. Our British tester got concerned when his unit hadn't arrived, so we traced it to the customs office. The unit looked so expensive the customs inspector didn't believe the declared value. Finally, several taxes later, we convinced him he could actually buy one for the stated price and got on with the testing.

What to Change

The new CS800S is two rack spaces high and weighs only 23.5 lbs! The CS800S wasn't lightened by using a smaller power transformer and fewer output devices on a "trick" heat sink. We use our years of digital and "switchmode" experience to develop an advanced high frequency power supply. More than just a replacement for the old heavy iron transformer, intelligent load and thermal sensing dynamically interact to provide more power, longer, and more reliably than previous approaches.

This, combined with our more than 30 years of experience building the most reliable solid-state amplifiers in the world, allowed us to redesign the whole amplifier from input to output, merging the best of the old with the best of the new to deliver 1,200 watts of superior performance without breaking you back or your pocketbook. The CS800 just keeps getting better!

\$1695



1200 W 23.5 lbs.

CS® 800S



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Australia Music NZ: 5 Amokua Street, Hen Jerson, Auckland Ph: (09) 837 3230 Fax: (09) 837 3232



Write in Reader Service Number: 177

Lexicon Studio: Seeking a standard

A hardware link from software to Adat (or DA88 or almost anything!)

By Julius Grafton

In a masterstroke strategy Lexicon have announced a product which comes closer than any before to establishing a standard in desktop audio recording. Standard is an elusive word in an industry fragmented by tape and hard disk digital recording formats, where the Alesis Adat comes closest to being a common format while still outnumbered by other systems.

Amongst the several hundred different 'proprietary' digital audio multitrack, recording, editing and workstation formats out there are computer based systems on Mac or PC, stand alone 'firmware' devices (like the Roland VS 880) and then tape based modular digital multitrack (MDM) machines like Adat and Tascam's DA 88/98/38 family.

A PC PLATFORM FOR MDM'S

Lexicon Studio System is based on a PCI card for Mac or PC which comes with several interface boxes. The twist is that Lexicon don't offer software to control the card, rather they are signing major software developers to provide control. Steinberg's Cubase VST is the first software package which, in a Lexicon compliant new version, will address the Studio.

Users with a computer based system already, will say 'so what?' The sting is that the Lexicon Studio interface allows connection to and control of an Adat machine. So the work already recorded on the Adat can be imported into your PC for editing, or recorded on the PC then bounced to the Adat. More impressively, Adat isn't the only outside format that Studio will interface with.

Virtually anything can be driven by, to, and from the system, with outputs for Tascam via a TDIF port, RS-422, Sony 9 pin, S/PDIF and an optional Video/VITC module.

Of course you needn't own or aspire to use external MDM recorders either, because with Cubase VST or other contemporary recording/editing packages you can record and multitrack direct to hard disk using Studio.

INTERFACES: HARDWARE

Lexicon's PCM 90 reverb lives on with Studio too, a new reverb card is available to plug onto the core Studio card. Called PC-90, the reverb effect card allows two stereo pairs of reverbs with six stereo dual reverb algorithms and 100 new presets. PC-90 is addressed by CuBase VST.

The basic interface is the LDI-12T which has two analogue audio inputs and outputs, S/PDIF in and out, and a 9 pin connector for video and audio devices capable of Sony 9 pin serial control.

More serious is the LDI-16S interface which has standard and optional connections for eight analogue inputs and 8 outputs, 8 AES inputs and 4 aes outputs, and interfaces for almost anything external. Two of these interfaces can be run together with one LDI-12T, for a total of 44 simultaneous audio tracks.

SMPTE time code from the Studio engine card is naturally available, the card also carries RAM and should

speed up audio processing functions on most computers. Some 'starter' users will record to their hard disk alone, Studio will allow this.

Whether you record to, from or with Adat or DA 88 type machines, or onto a separate hard drive hooked onto your PC's SCSI port, Studio is designed to be the interface. If your software has machine controls for your external machines then they will be operable using Studio.

SOFTWARE THE FUTURE KEY

The significance of this system is that if Lexicon can convince other software developers that their software

should address the Studio, then there is a consistent hardware interface for users. This will allow for tailor made and upgradeable recording systems. Software developers will need to incorporate code within their programs to address Studio, and users will need to upgrade to a new version of whichever software joins the party.

But hey- software upgrades are something we are all used to. Except at the Connections office where we soldier on with Microsoft Word V5, circa 1992. Because it's better than the newest version.

Australian Distributor:

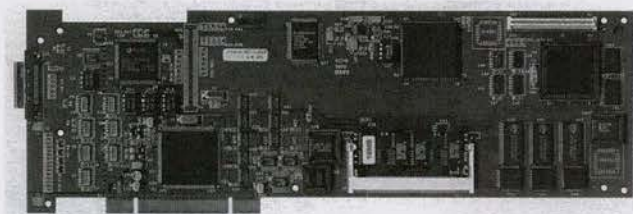
Studio Connections, phone +61 3 9874-7222,
+61 2 9873-3994 NZ Distributor: Protel
Singapore Distributor: Studer Singapore
Hong Kong Distributor: Advanced Communication Equipment
Price: Core 32 PCI Studio engine with LDI-12T interface
and PC-90 reverb: under A\$10,000.



PC-90 software face



LDI-16S interface (rear panel)



Lexicon studio PCI card for Mac or PC

LIFE IS TOO SHORT FOR BAD EQ

Scientists tell us that our ears only have a short time in which they're at their peak. So why waste it?

If your job involves listening to music all day and/or night, why not do your ears a favour and let them hear it through an ARX EQ60 - the cleanest, quietest, musical graphic equalizer ever to come out of Highett!

1. All analog circuitry (and proud of it!)

Instant access to all frequency bands, no nudge buttons, no hard to read LCD displays nor any one of a hundred things on most people's list of digital dislikes.

2. Smooth, well damped faders - with knobs on!

Hey, a lot of equalizers don't even have knobs, just the end of the fader poking through the front panel. Tacky and cheap.

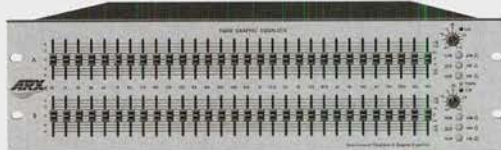
3. So quiet that it doesn't need noise reduction built in.

Our theory is this. If you poke a signal into an equalizer, what comes out the other end should be exactly the same, minus anything you have changed. No extra noise, distortion or other unwanted stuff. The EQ60 is quiet and smooth enough for CD mastering,

and it has headroom and noise figures that digital EQs would cut off their left xxx for!

4. Constant Q filter design for true WYSIWYG performance.

When you pull down one fader 3dB on an EQ60, that's all you get. Just 3db down on that fader. No interaction with other frequencies, no sudden phase changes, no nuthin'. That should make life a little easier, for a start.



5. Built tough.

The EQ60's rigid U-channel extruded aluminium front panel resists flexing to a far greater degree than the thin punched aluminium sheet that most other EQ's use. The result? An EQ that works and works and works and works and works... At the 1997 Entech Awards, the ARX EQ60 was awarded the coveted "Most Popular Audio Product" award. Voted for by industry people

all around the country, the award reinforces what we have been saying for a long time... 'It doesn't have to be imported to be good'.

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Danish Pro Audio Mini Mic's

The Sydney Opera House audio department recently purchased 20 Danish Pro Audio DPA4061 lapel microphones—they are the first to use them in Australia and Connections went to find out how and why, and found out that not everything is big in opera. Opera House Sound Engineers David Turnbull and Tim Greig were the technical hosts.

By Dan Cole

Danish Microphones at the Opera

If the Sydney Opera House are keen about a product you can be sure that it has been rigorously appraised. This is for good reason; in terms of sound, Opera House patrons are well tuned and critical listeners—they know what they like. The Opera House also records many performances so the links in the audio chain must be dependable and of high quality.

The Danish Pro Audio 4061 is an omnidirectional, condenser lapel microphone, 5.4mm in diameter and 12.7mm in length or, about half the size of an average fingernail. Very small, but with high sensitivity and transparency characteristics. There are three types in the DPA range and the 4060 and 4061 are primarily designed for wireless applications in TV and theatre and are compatible with most UHF and VHF systems.

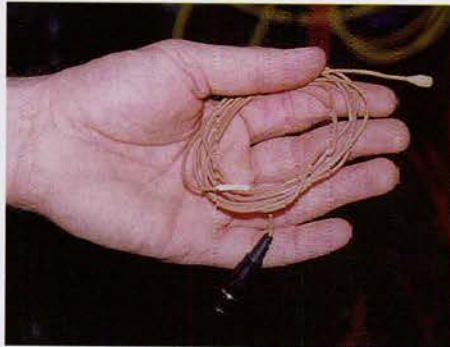
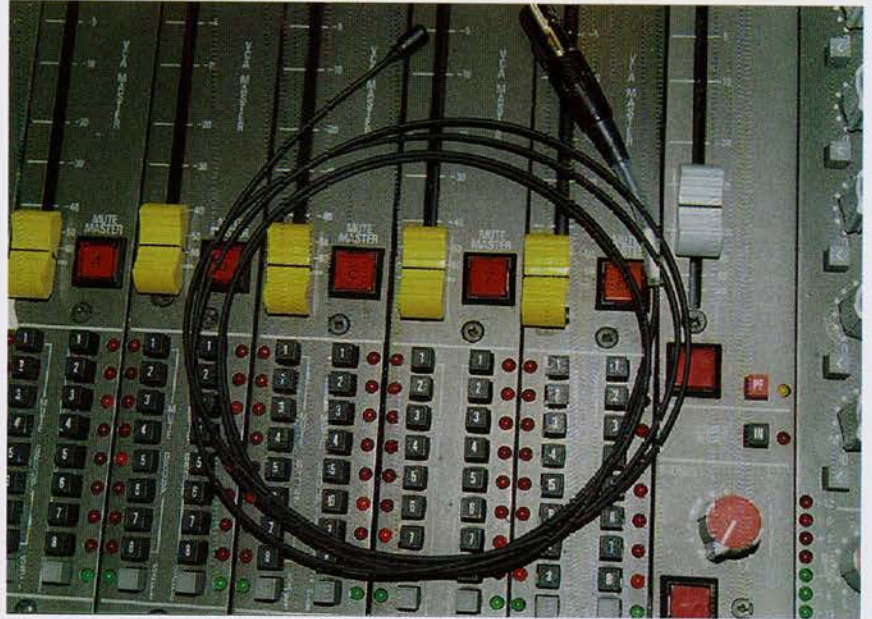
(When Bruel & Kjaer recently stopped making microphones Danish Pro Audio picked up the license and the highly skilled people involved, so although these microphones are B&K by design, they are manufactured by Danish Pro Audio and are Danish Pro Audio by name.)

Opera House Sound Engineers David Turnbull and Tim Greig explained that the 4061s are used usually on English operettas such as Opera Australia's *Fledermaus* as vocal mics to amplify dialogue [more on this below]. The 4061s are either placed on the singer around the upper chest region, on top of the forehead at the hairline, or above and in-front of the ears again at the hairline. David Turnbull:

'There are 3 or 4 mic. positions—if there is a quick costume change, the hair is the preferred position. So far as mic distance from the mouth, anything between 15-30cm is optimum,' Tim Greig continues, 'Sonically these regions are quite different: on the chest you pick up chest resonances which dulls the sound. The top of the head is the most natural, near the ear is second best.'

'To allow for the changes in sounds in different parts of the body DPA supply two grids which change the top-end response—the longer grid is about 10dB brighter [at around 12kHz] intended for on the chest or body,' Tim said. According to DPA specifications a shorter plastic protection grid can provide a 3dB soft boost at around 8-20kHz.

Normally they only use one DPA per



singer, as David explains,

'That's not the rule book *Cats* might be backed up but Opera singers are not used to carrying around transmitters so we try to make life easy as possible for them.'

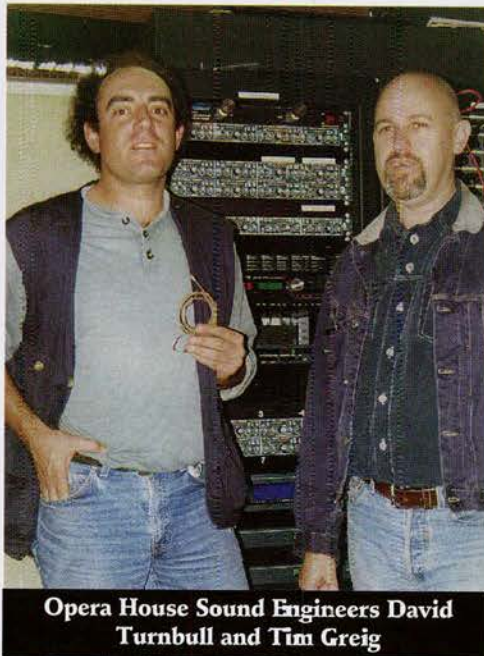
If in the event of a microphone failure there are three AKG C547 PZM-style mics on the stage of which David is also keen, but that's another story.

Performance

The Opera House were using an industry standard mic yet it had a tendency towards coloration, as David explains,

'If you put one in the ear, for instance and one on the chest, there was a big difference in the sound in particular areas. Also the other mics were sensitive to wear and tear, and in these applications for instance, perspiration can be a real killer—'sweat-death' as it's called.'

David and Tim were impressed by the 4061s dynamic range and sensitivity to size ratio. With the SPL capacity before clipping, at between 134-154dB, high SPL audio applications would be no problem, an important characteristic considering the high levels that many opera singers are capable of reaching. In this application the lavalier microphone must



Opera House Sound Engineers David Turnbull and Tim Greig

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be able to both amplify subtle nuance and handle sonic extremes.

David Turnbull:

'I believe these are the mics they use in the cockpit on Formula 1 coverages. An opera singer can hit some incredible peaks.

'We used a show to run a AB test and it was extremely noticeable on the night, in fact too good—I had to redesign the mix so the characters didn't up stage the other performers using the other mics. I had to make them sound inferior to match performers—the 4061 literally leapt out in the PA.

Tim Greig continues: 'We were surprised at the incredible transparency, sensitivity and low distortion. If anything some people don't like them because they're too good and they're not used to that.'

Maintenance

Apart from its impressive sonic characteristics, Danish Pro Audio engineers seem to have gone that little bit further: despite its size the 4061 has a durable housing, it is designed to be maintained and subsequently is expected to have a long performance life, in the end, lowering equipment overheads.

David Turnbull: 'In the past, with various radio mics, the sound would change with wear and tear—fast costume changes, make-up to disguise the mics, etc. Normally with lavalier mics when they die you just throw them out—that's expensive—some of them only last a few weeks.

Tim: 'They have a gold plated diaphragm which you don't normally get on smaller lavaliers and there is a chamber where moisture drains so it doesn't sit there on the capsule.'

David explains this: 'If you PFL during a musical sometimes you can hear some deterioration like popping, which is caused by beads of sweat getting into the mic. In a dramatic section or piece this can be a real problem.

'On every sound check the day after performances the DPA would sound clean.'

Power and Connectivity

Tim Greig: 'Our DPAs are hard wired to our Shure System, however a DPA mini-connector/converter can connect the 4061 to every system on the market which is quite ingenious.'

Powerwise, the range requires very little in an gesture aimed at conserving transmitter battery life. The DPA's are designed to use 5-9v DC (which usually comes from your radio transmitter belt pack) and when used in XLR mode an adaptor pads down 48v desk power to the required voltage which means you can use it as a cabled microphone.

Other Uses

Whilst the DPA 4061 has been designed for wireless theatre TV applications, Tim and David see no problem with other uses. David:

'Moving pianos with a cabled mic can be a hassle so I might try the DPA here; I might place the transmitter and mic over the ports of piano. I have also done location film and video work and I wouldn't hesitate using the DPAs in this application.'

Tim: 'I don't think there are any limitations—I plan to do some

tests on instruments; drums, guitar and orchestral instruments. We've found using omni's with a P.A. not to be a problem, you do get spill but with less colouration. With a cardioid, spill is uneven across the frequency range because the rejection is not consistent—it's usually a large mid-range dip in the off-axis response.'

Tim: 'Price-wise, they are not that much more than similar mics and based on their reputation [B&K/DPA] you would get much more use out of this product than competing products.'

Sound By Stealth

You might be surprised, as I was, to learn that only English scripted operettas which have dialogue are amplified while the average foreign language opera is acoustic. This is because opera singers normally are not trained to project the spoken word as well as an actor, also the Opera Theatre acoustics are designed for the singing voice.

David Turnbull: 'That's why we amplify—it's quite subtle. This is sound by stealth and you need a flat response with maximum dynamic range and output from your equipment.'

If an opera is amplified it has to sound to the audience as though it isn't and according to David Turnbull this is where the DPAs come into their own.

'We are creating an illusion; what the set designers and lighting designers are doing visually we are doing aurally. The DPA's take so much weight off your shoulders because achieving a natural sound is the hardest thing to do—it's very easy to make something loud, very hard to make something sound un-amplified and that's where the 4061s are quite brilliant because you don't have to think twice about it.'

DPA 4061 Manufacturer's Specifications:

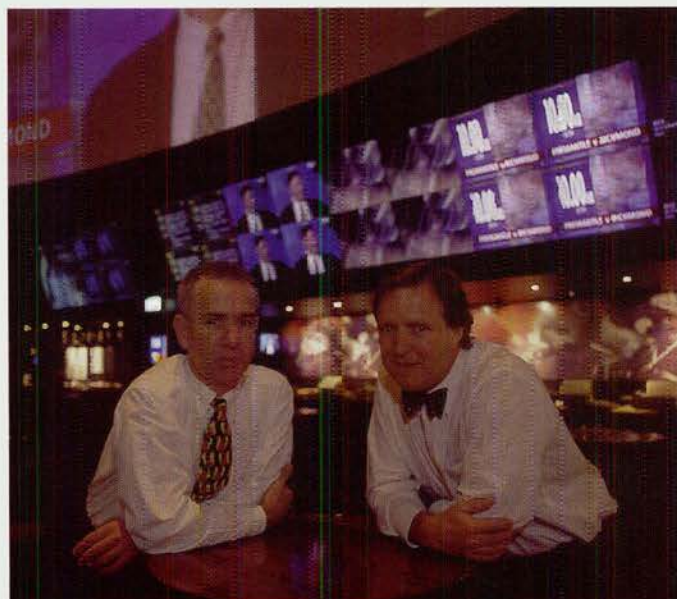
Cartridge Type:	Prepolarized Condenser Microphone Element w/Vertical Diaphragm
Principle of Operation:	Pressure
Powering:	Consumption: 0,3-0,8 mA, Voltage: 5-9 VDC.
Frequency response:	On-axis without any grid fitted: 20Hz-20kHz ± 2dB
Sensitivity:	(nominally) 6mV/Pa ± 3dB
Max. SPL before clipping:	144dB SPLpeak
Tot. Harmonic Distortion:	<1% at 123dB SPL peak <1% at 120dB RMS sine
Dimensions:	Microphone: Diameter 5.4mm, length 12.7mm Cable: Diameter: 1.6mm, length 1.8mtrs.
Finish:	Black, Beige and White

- **Price:** Around A\$590 each including tax.
- **Manufactured By:** Danish Pro Audio, Denmark.
URL: www.danishproaudio.com for full specs.
- **Australian Distributor:** Studio Supplies, call +61 2 9957 5389.
- **NZ Distributor:** Audio and Video Wholesalers +64 907 847 3414
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Crown Cube Wall 'the largest yet'



Gerry Wilkins, IDT MD with Pioneer MD Ken Barelli in front of the 16x2 cube display at Crown's Spots Bar

After a rigorous appraisal process Pioneer's RM-V4000VE projection units were the preferred product for Crown Casino's various entertainment spaces. In total, 108 variable 40-inch scan multi-project projection Cube systems were installed and Pioneer say that this is the largest video cube wall installation in the southern hemisphere.

Sydney vice-wal rental and sales company Image Design Technology were responsible for the supply and installation of the equipment and are also service providers—IDT are one of Australia's leading large screen entertainment suppliers with installations around Australia.

Contract tenders went out over a year ago and once compiled the Casino wanted to see a 'shootout' from suppliers. Over six major suppliers assembled their hardware at Melbourne's GTV9 for evaluation. From strong competition Pioneer/IDT won the contract based on picture quality and brightness under high ambient light conditions equivalent to that experienced in the Casino.

The Pioneer RM-V4000VE video Cube series comprises 40-inch rear projection screens which are designed to stack together in a number of configurations—inside, a projection engine, screen and lens section which can be serviced from the front or rear without major disassembly.

In the Casino, the RM-V4000VEs are interfaced to an Imtech UltraMAX controller which, amongst other things, provides the processing power to facilitate big screen viewing. High resolution digital processing and line doubling to 31.5kHz are also facilitated by the Imtech UltraMAX controller which enables processing capability to configure a large number of Cubes. The RM-V4000VEs can also facilitate different formats such as PAL, NTSC, double scan, VGA etc.

RM-V4000VEs were installed in: The Sports Bar - a 16 x 2 Cube display stretches across the width of the room; two 9-screen Cube walls are installed at the entrance to the main food bar and casino room; three Cube walls have been installed near the Johnny Earnham Room, the 3ashes store entrance and the Car Park entrance; and finally, The Ballroom hosts a further two 16-screen walls.

Pioneer Cubes are installed in a range of venues in Australia including the Jam Factory's Village Cinema Complex in Melbourne, the Harbord Diggers Club in Sydney, ATN7 Sydney, Treasury Casino Brisbane and the Myer Melbourne City Store as well as a number of international events and installations.

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CHRIS FOGEL - Recording Engineer

"Live recording situations are unique in that you get only one shot to get a performance on tape, and you have to do it with limited space. My task was to recreate Alanis Morissette's studio sound in a live recording. I couldn't use my usual tube-mic plus 8-rack space vocal setup, so I trusted the 2C51. With minimal eq and only slight compression, I was able to almost match her studio sound, all in a single rackspace."



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Directions in Ghost

Soundcraft's project studio console assists with the new album from d.i.g.

By Julius Grafton



Richard Austin with the Ghost

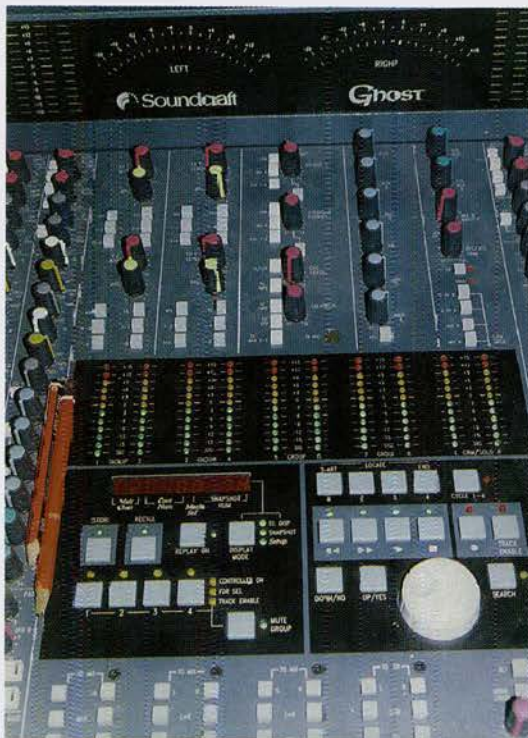
On the surface, analogue mixing consoles are straight forward. You can see if one has the features you need, and from there on it's just a question of performance- which comes down to noise and equalisation.

D.I.G. is the Australian based band Directions In Groove, who have had chart success in recent years. They decided to establish their own recording facility next door to Troy Horse Studios in Eastern Sydney. There they are recording their next album, working title Curvy-Strasse.

I went there and interviewed recording engineer / producer Richard Austin, about the console - a Soundcraft Ghost.

OVERVIEW OF THE GHOST

In studio use most consoles are still analogue, but digital is ramping up. There are reasons many people prefer analogue, and the main one is that a digital console never has all the knobs and dials that a standard mixer has. It's all hidden behind the 'user interface'



Centre console is this automation block, the part which sets the Ghost apart from other MIDI snapshot consoles. It has more to it than meets the eye, as our review reveals...

which is a stumbling block. But it gives you immediate resets, snapshots and fader automation. On the minus side a digital console needs to convert your typical analogue signal from your mic or synth into digital audio, and the converter (Analogue to Digital, or 'A-D') needs to be gentle on the sound and sometimes isn't. There is also an issue with the ever-so-slight time delay that must occur during the conversion of signal to digital.

Soundcraft have an interesting console in the Ghost. It is purely an analogue inline mixer, which typically allows you to multitrack to and from either 24 or 32 tracks. With 24 or 32 lines going to the multitracks, and 24 or 32 coming back in, it is on the surface just like any inline mixer.

MIXING

The really big thing about Ghost is the equalisation. Many sound engineers have an infatuation with 'The British EQ', typified by that offered on Soundcraft consoles. I myself always liked the accuracy and 'sound' of the EQ on those Soundcraft mixers I used.

On Ghost the EQ takes the form of a pair of fully parametric equalisers, which offer sweep from 25Hz to 20kHz with a healthy overlap between the



Head digger, Scott Saunders

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two, and variable 'Q' (or bandwidth). This is real parametric EQ, because there are three controls for each section. Sweep (for the frequency selection), Q for the bandwidth (ie: one sixth of an octave or variable to a fairly wide 2 octaves) and 15dB of cut or boost. Also provided per channel is one LF shelf at 60Hz, and one high frequency shelf at 12kHz - as well as a high pass filter (HPF, 100Hz, 18dB per octave).

Richard Austin was very enthusiastic about the equalisation.

There are also 10 auxiliaries on Ghost, shared between the mix A (input) and mix B (mix down) path.

All straightforward so far.

The big feature of the Ghost is the automation block in the middle, which is slightly different.

AUTOMATION

Mute automation is where the channel gets turned on and off, so there are 24 input channels on the subject Ghost, and the 24 tape returns (or 'B Mix' inputs) make up a total of 48 inputs which are all 'mute-able'. Being able to silence these is a plus.

The Ghost has two separate MIDI mute functions.

The first is a preset method, where you establish and fire your mutes on demand. It utilises MIDI and allows up to 128 presets or 'snapshots', which are any combination of the possible mutes switched on or off. These are stored in flash ram in the console.

The second MIDI mute function is a form of dynamic muting which requires you to add a MIDI sequencer to the setup to record console information. Quite simply, this method is exactly like recording any MIDI signal into your sequencer. Program Changes change console mute presets, Note On messages give you individual channel mutes, and the four MIDI data faders on the Ghost

are seen by the sequencer as MIDI continuous controllers allowing you to control the parameters of MIDI devices. (These faders also double up as audio groups 1-4.) Once the tracks are recorded, the sequencer fires the consoles mute automation while any recorded controller data is fed directly to the device you want to control - like an effects processor or a synth.

The third part of the automation block is MIDI Machine Control and Sync, which is a major feature on the Ghost. This is quite simply where your tape machines are controlled from the Ghost itself, via a control panel. There are a couple of ways to address your devices.

You can do this via MIDI Machine Control, one of the most recent additions to the MIDI specification. This allows traditional tape machine control to be delivered via a MIDI stream. ADAT, DA88 (and derivatives) and the Akai DR series hard disk recorders can be controlled this way.



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The second way to control devices is via what is known as Sony 9 pin control, typically for video tape machines (VTR's). The level of machine control from the console depends on how the machine control is supported by the machine - an example:

A Tascam DA 88 can be controlled via MIDI Machine Control, whereupon jog shuttle is not supported. However the same machine can be controlled via Sony 9-pin, and the jog shuttle works. It is not the console that determines the functionality but rather the tape machine itself.

Two synchronisation variants are offered, MIDI time code (MTC) via the MIDI IN port, or Longitudinal Time Code (LTC, aka SMPTE code) via the SMPTE reader input. A SMPTE generator is onboard, the Ghost can be run as a timecode slave or master.

SMALL PROBLEM

At the DIG studio I was unable to see the MIDI system in full flight as there was a problem. Richard Austin was unable to fathom what the problem was, exactly. He could use MIDI mutes OK, but the dynamic MIDI automation wasn't functioning for him.

I called Nick Orsatti at Jands, who have been importing Soundcraft for more than a dozen years. Nick is a high technology trainer and product specialist who knows his MIDI.

At the time I visited the studio the core MIDI system comprised a PowerMac 6100AV with 16Mb of RAM and a Music Translator (2 in/2out) interface running Vision software for sequencing. Devices that required connection to the system included the Adats, the Ghost, and effects processor and no less than six different synths, samplers and modules.

With only 2 in/out combinations, just connecting all this was a challenge. Nick had suggested when delivering the console that d.i.g.

upgrade the interface. I got there before they had done so.

After, they purchased an Opcode Studio 4 interface and some more RAM for the poor Mac. The system still didn't work!

A LESSON LEARNED

Nick went to the Studio and spent some hours with Scott Saunders and another engineer / producer, brought in to assist with the project- Lex Wilson.

They spent some time nutting out the Opcode Open MIDI System setup and got everything talking. Except for one thing. They could record dynamic MIDI data from the console to the sequencer, but not play it back!

Suffice to say, much checking of setup and swearing transpired. The problem remained until someone replaced one of the new \$10 MIDI cables! Everything now works as advertised, and the album is headed for completion with a happy band hard at work through the Ghost.

d.i.g. are finishing Curvy Strasse on the Ghost, as planned. It is my thought that you can audition the Ghost by listening to the forthcoming d.i.g. release. Good idea?

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Exhibition season in full swing

INFOCOMM ASIA

By Nazir Keshvani

SINGAPORE: Infocomm Asia, the Asia-Pacific's only one-stop audio visual and projection technology event was held at Suntec City in Singapore from 16 - 18 September '87.

The three-day show featured over 150 exhibitors from 24 countries displaying the latest audio, video, presentation, multi-media, computer and interactive conferencing technology, and drew about 5,000 visitors. The show made its debut in Singapore in 1995.

Chris Miller, chairman of the International Communications Industries Association (ICIA) which organised the event, said at the opening of the show. "We came to Asia because we knew that huge potential was there for

our manufacturing and distributing members. We now know this market holds far more than just potential, it's part of our market today," he said.

According to Miller, visitors to Infocomm Asia "saw new display technologies applicable to presentation environments, such as boardroom, the classroom or the command and control centre".

A highlight of the show was the Projection Shootout, in which 68 projectors from 26 companies were lined up side by side shooting identical signals on common-sized screens for unbiased product comparison.

The AV and projection market in Singapore enjoys annual growth of between 20 and 30 per cent.

AIMS 1997 GETS PUNTERS

By Julius Grafton

SYDNEY: The musical instrument trade held its biennial show at the Sydney Exhibition Centre in late September.

The show occupied one hall, considerably down from previous years, and testimony to the slow but insidious decline of the musical instrument market. "We've been too busy fighting each other instead of building the industry" a distributor told me. This has been typified by division within the Australian Music Association, who host the show. However the signs are set for growth from now onwards, according to the trade.

Despite the tough climate, many exhibitors has a good show, happy with the estimated 8,000 public who attended across the weekend. "People need to see

equipment, I think the public is the key" says Mackie distributor Dave Croxton.

Tony Ruso, head of AR Audio Engineering who distribute QSC agrees. "I met a guy who had \$50,000 to spend on a PA - he wasn't from within the trade, he was from the public".

Getting the public through the doors was a triumph for the organiser, Rob Walker, given the punters were overloaded with options - as the Pacific Circle Music Convention was held in Sydney across the same weekend.

Connections is attending the AES show in New York at presstime, and LDI 97 in Vegas later this month.

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NewsBoss: A software audio package for radio news rooms

By Dan Cole

Whilst digital compiling systems have been on the market for a while, the concept has become refined. One new product is a Canberra designed and written software newsroom system called NewsBoss and in its short history (of only 4 years) has found friends at Sydney's 2SER, The Radio Network of New Zealand and Charles Sturt University.

I was air-dropped into Bathurst (from my Editor's light plane) to see the system at work.

With ever increasing time and resource impositions on the 'modern' radio newsroom, the technology to put it all together must be savvy, reliable and easy to use. This has been compounded by a generational shift in technology from tape to bytes; when it comes down to cost and convenience, it seems that digital news assembly systems are now preferred in busy radio newsrooms.

Charles Sturt University run a well regarded Communications School at the Bathurst town limits. The Charles Sturt campus co-ordinates a fully operational professional national news service which can be picked up by community stations around Australia if they are linked to ComRadSat. The service is part of tri-partite arrangement between Charles Sturt University, the University of Newcastle and the Community Broadcasting Foundation. Experience from this busy news room looks good on students' resumes and graduates from the School have a high industry placement rate: people study at Bathurst to be employed-it's that simple.

This environment is also good for road-testing equipment because it has to be bullet proof.

The Product

The NewsBoss system works as follows.

A journalist brings in a MiniDisc interview or audio actuality and loads it into a PC. The Journalist then edits, adds text, compiles and orders the story according to the days schedule entirely in the digital realm using NewsBoss utilities. The Newsroom Editor can access any story at any time and can then edit and compile the bulletin running order. The finished stories are read, cued and played-out through NewsBoss straight to air. Neat and tidy.

But what is it? NewsBoss is a software package which runs under Windows 95 or Windows NT4.0 operating system. The minimum system requirement is a 486DX-66 with 16MB RAM and 540MB HD and standard .WAV compatible sound card.

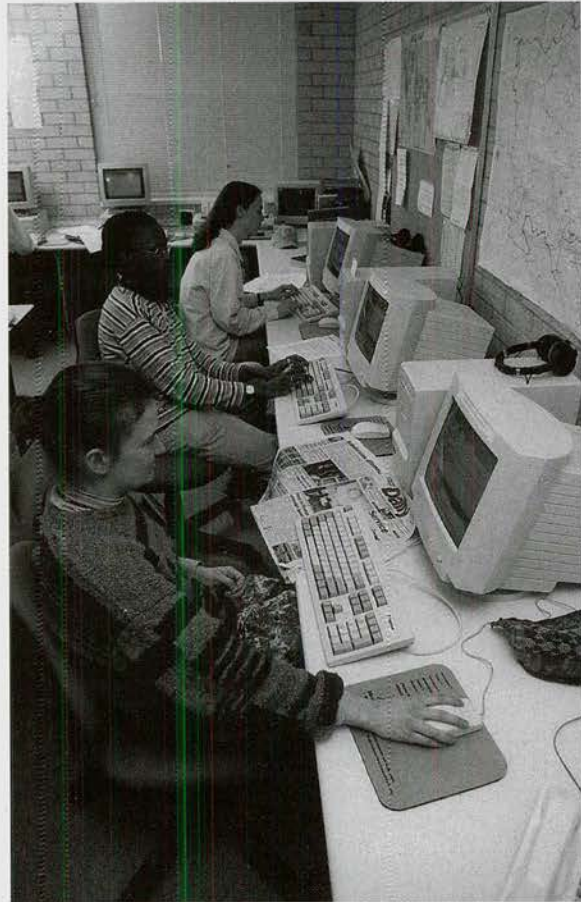
However for optimum performance a Pentium 133 or better, 16MB RAM and 2.1GB Hard Drive, with a SoundBlaster SB-16 sound card, is recommended.

NewsBoss is fully scalable from a single user system to many networked PCs using a dedicated file server. Facilities Manager in the School of Communication, Peter Brady said: 'We have five workstations and will probably add 6-7 workstations down the track. We may even put in a complete laboratory which doesn't go to air.'

The Decision

Ben Hamilton, News Editor in the School said Charles Sturt recently made a leap from supplying the local community radio station (2MCE-FM) with stories to providing a national news service by satellite.

'We had to upgrade from a word processor to an integrated newsroom system which had the AAP wire service, could edit cur



audio and compile the bulletin on the workstation. After looking around, NewsBoss offered the best in terms of price and features.

'NewsBoss allows full audio editing, full text editing, a combination of both and rolls it all into an auto cue prompter system.' According to Mr Hamilton this reduces errors and improves the quality of the ON AIR presentation.

'The program has strong similarity to the BASYS system which ran in a DOS like UNIX environment, and was the industry standard in the 1980s. NewsBoss runs in a Windows environment so it's very easy to navigate around.'

The School has added some external items such as a custom made audio break-out box, to route MiniDisc program straight into the system, and soon four CD-ROMS will be installed to run the service's cues.

NewsBoss FEATURES

Story Preparation

The NewsBoss word processor supports all standard Windows clipboard operations and text formatting, similar to Word 6. A unique "rewrite" feature allows stories to be re-written with two text windows open at the same time enabling easy comparison with the original text.

Stories from the Wire

International and local stories can come in on the 'wire' via a Datel or DDS line or satellite circuit and NewsBoss can receive and process an unlimited number of such services in any format. Stories



can also be transmitted to any remote news computer system via a serial connection or Wide Area Network (WAN) using the TCP/IP protocol.

'We only have AAP at the moment which is a subscription service; as long as you pay the cash the stories will keep up-dating automatically. This is through a Telstra Datel service.'

This is where the split screen rewrite mode is useful so comparisons between the original to the edited version can be made. Once the file is created, file options inform the user of the source, when it came in and likely play-out story duration. As well, the completed story can be allocated to anyone's folder by a simple drag-and drop action. There is also a feature called "New Story Notification" which informs the user of incoming wires so stories are not missed—such as a light plane just landed in Bathurst's main street!

Presentations From NewsBoss

The Prompter is a feature unique to NewsBoss and it is from here that a broadcast is put t air-without hard copy. The story scrolls on the screen at an adjustable read-rate and font size. Text colour and background are also fully configurable. Whilst the actuality from one story is playing the next story can be previewed and ready to go. Audio cuts can be played on the Prompter screen from both the NewsBoss native .WAV audio system or the AudioVAULT digital audio system.

Audio Editing

Another unique system feature is audio editing. Once 'actuality' (buzz word for audio content) is loaded into NewsBoss, audio can be edited via the waveform window (non-destructive if required).

Contact List

The NewsBoss contact system has space for standard information plus a large "comments" section.

Magaging NewsBoss Data

One of the strengths of the NewBoss system is its capacity to handle large volumes of text and audio for broadcast in a clear and logical manner. Once stories are finished, the database is used to file

them until they are needed again. The database can be arranged according to the needs of the individual newsroom and there is no effective limit to the number of stories in the database. NewsBoss also has an automatic "purge" system which automatically culls stories after a period of time, allocated by the user, either every 24hours to two weeks or more. Story ordering in a rundown queue is manual and is accomplished by a drag and drop action.

'When students finish writing a stories and I have checked them they go into an "approved" folder, including "rundowns" for the day, said Ben Hamilton. He continues, 'This is a good feature because I can check everything they are doing from my workstation and students have no access to a rundown.'

Security

NewsBoss has been written to allow priority data allocation. Every user has their own file and log-in with different levels of access and files can be locked and passwords are used to access the system. Two access levels are supported by NewsBoss; an Administrator has full access to all files whilst the Normal user has restricted access.

Other features: Stories can be arranged in any sequence from a rundown queue; A 'pencil' icon means you can write in a file; NewsBoss can estimate the read-time of text so stories can be timed exactly. For instance, this sentence might have a read-time of 4 seconds. Any addition or subtraction is automatically re-calculated while the writer types; A Tools utility also provides a means to manage and repair the database if required.

In Closing

Ben Hamilton: 'We use NewsBoss over anything else because it's easy to use. We are teaching large numbers of students to use it and so far we haven't encountered any problems. NewsBoss combines all the features we need like automatic wire capture, text editing and audio recording and editing into the one package which allows us to put news to air with a minimum of fuss.' Peter Brady adds: 'Recently both the CEO of the ABC and AFTRS chief engineer visited the facility. These people have looked at systems around the world and they were very impressed, as well, it's an Australian developed product.'

'Having everything integrated more than halves preparation time such as script and hard copy writing and printing. Its rundown queue feature made a lot more sense than any of the others and of the six different systems this was best. NewsBoss was certainly written with the journalist in mind.'

- **Price:** Around A\$2-3000 per unit depending on number of users.
- NewsBoss is distributed by Innes Corporation +61 2 9457 0044 or fax + 61 2 9457 0054. A good contact: Chris Dredge
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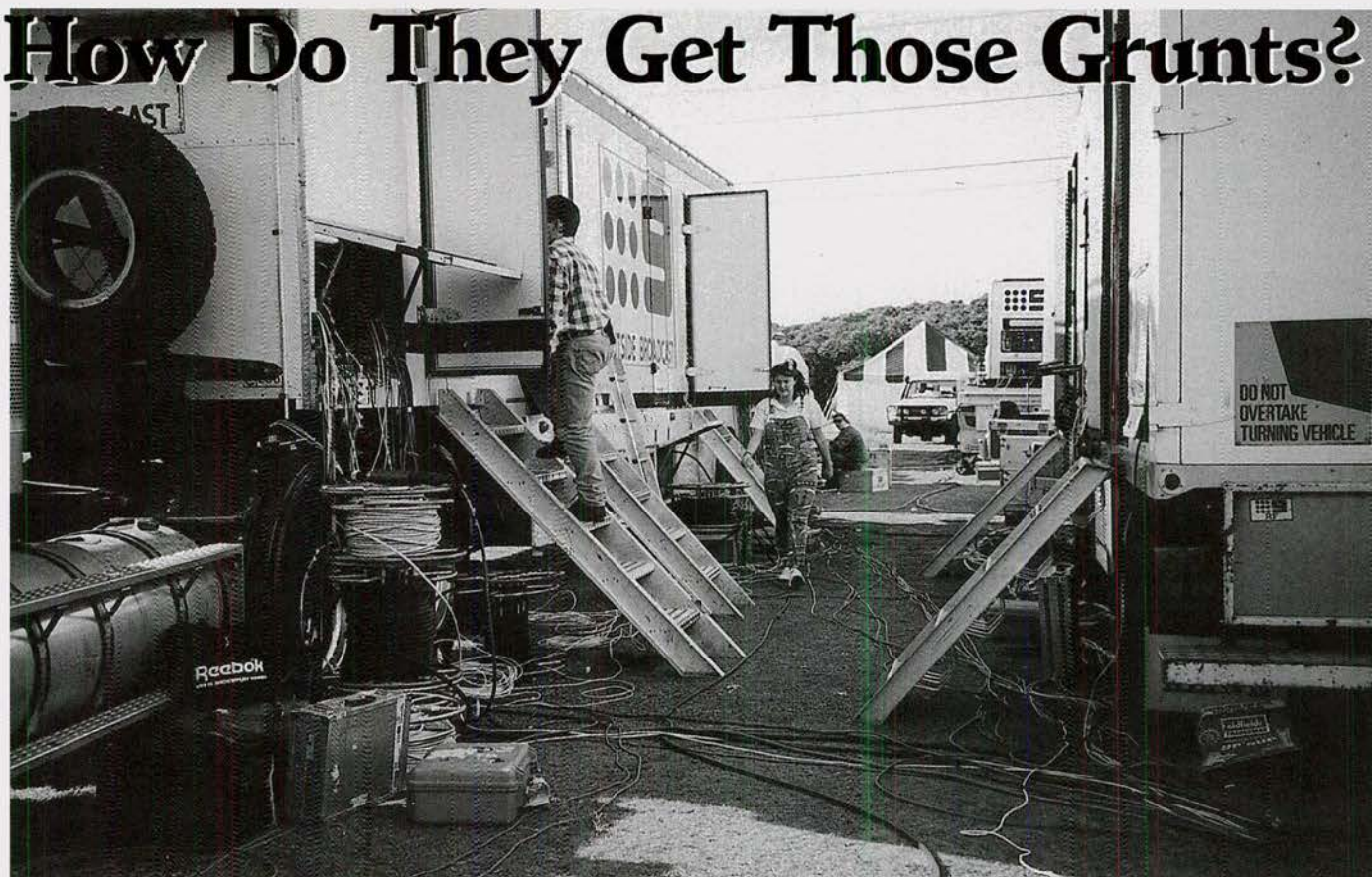
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How Do They Get Those Grunts?



The inside story behind an outside broadcast

by Madeleine Murray

To the untrained eye, an OB (outside broadcast) unit probably looks like a bunch of semi-trailers, surrounded by hundreds of orange and beige cables, with a lot of guys wearing plastic passes dangling from a string around their neck, drinking cups of Internacional Roast instant coffee, and calling each other mate.

Well, it is all that, and more. They even eat chicken legs with gravy from plastic plates. Ah, show business...

Getting ready

I visit the Channel 9 OB site in Sydney three hours before the game, and watch them set up. The venue is Shark Park, the Super League semi-final between the Cronulla Sharks and the Canberra Raiders. The first person I meet is Dallas Konitz, who is down here for the day from Brisbane, as assistant. Normally he is the OB supervisor, in charge of the engineering side of putting the OB together. We are standing in a cordoned patch of grass, hemmed in on both sides by semi-trailers for camera, audio, control, engineering, and video tape replays.

Basically the trucks are like a set of building blocks, mobile studios taken on the road. There is a sound studio, with a mixing desk and a wall for communications, the vision switching/control director's studio, and the camera/engineering in one truck. Video is another truck, and the generator is at the end. To make it even more complicated, today there is an ABC OB van, working for TV New Zealand. They take the mix and the effects from the Channel 9 source, then add their own commentaries.

The trick is to connect all the mics, and cameras, and studios to each other, and to allow everyone to talk to each other instantly. This is the fast lane. All the red cables are camera, connected to the engineering area. All the video looms interconnect the trucks with tape machines and vision sources. Another loom goes up to the commentary box. The vans are about 5 minutes walk away from the field.

In the park, the cable is actually buried in the drains, to keep it out of the way of the public. When it rains, the cables sit in water. So, the

techs try and make sure the cables are without any nicks.

With cables going from nine cameras, and nine mics all the way back to the truck, that's a lot of cables, about 150m of multicore for each.

On the roof of the stadium is a camera, 4 mics, and 2 standby microwave links for transmission to the Television Operating Centre, then to Channel 9.

Cameras

The game is broadcast live tonight at 6:50 on Channel 9. The basic set up begins with nine cameras. Five are fixed. Camera 1 is on the roof, with a wide overhead shot of the field. Camera 4 is a sideline runner, who runs up and down the side covering the field. 7 and 8 are the far corner cameras. They cover mostly from the corner, but they go behind the goal post for kicks. The other cameras are each side of centre field.

At the vision mixing/control desk, the director and switcher are dealing with nine cameras, five tape machines, a couple of character effects generators, some digital effects generators, and slow motion playback. And I thought it was just a game!

Sound

Peter Laird is the audio head. His job is to set up and perform the sound mix. His source is nine mics. Six are set up on the roof, for crowd noise. Four are mono shotgun mics pointing out towards the other side of the field. These give the big open atmospheric sounds. Two are Sennheiser 816, and two are Sennheiser 416.

A stereo mic hangs over the crowd. Another stereo mic is set up on the sideline pointing back into the crowd, to give definition to the clapping. These are Shure VP88s.

To cover the field sound, two guys run up and down the sidelines with radio mics. Both near and far sidelines are 816 shotgun mics, going to Sennheiser indoor radio transmitters. "These guys are pointing the mics at the clashes, the sweat, the grunts," Laird explained. "Sometimes they pick up the occasional foul word, which

we try and get rid of before it goes to air. That's not always possible, because it's live. But they get the field sound. We try to get a blend so you feel part of it as well."

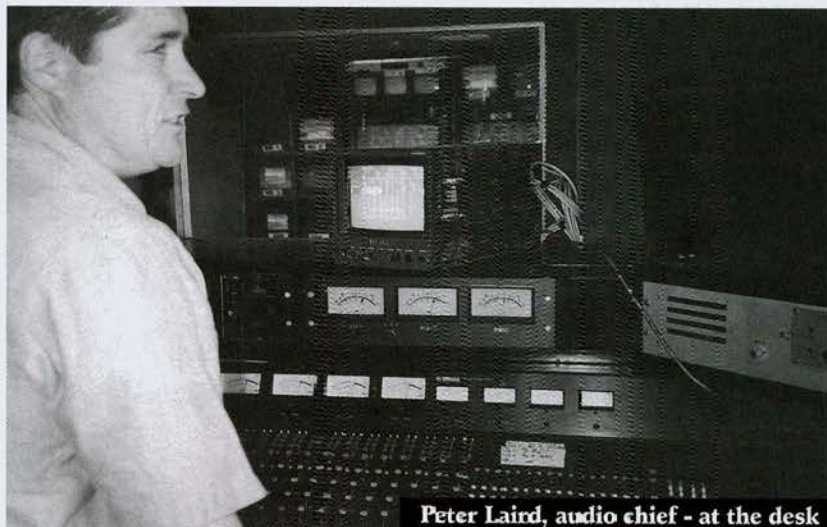
Today Laird is using a Yamaha PM2000 mixing desk. "The other truck has a Yamaha PM3000, and another truck has an analogue pathing digital control mixer," he says. "This is our worst audio truck, we're too limited, the PM2000 is archaic. We're looking at upgrading to a PM4000."

While Laird is talking to me, Greg Bennetts, Communications head is listening to some very loud tests beside us. These vans are small, cramped, and claustrophobic. I can't find a spot to put my briefcase down, and anyone over 5'10" has to duck.

"Greg is running around getting everyone's communication working," Laird explains. "It's a nightmare. There is so much communication on OB. Everyone needs to talk to everybody. They use three radio channels for talkback. One is between the floor manager and the director. The floor manager is on the field, and he actually cues the ref to start the game. Another frequency is for my audio talkback, and we share that with general technicians. The third transmits the program to a commentator on the sidelines.

"While the game is on, Greg is listening to the communications, and I try not to have to listen to anything but the game. I have to concentrate on the balance, especially with football, because you want to get the most out of your effects, without burying the commentators. If you don't have your effects up there, it doesn't sound big. We try to get that balance, which is very difficult to achieve.

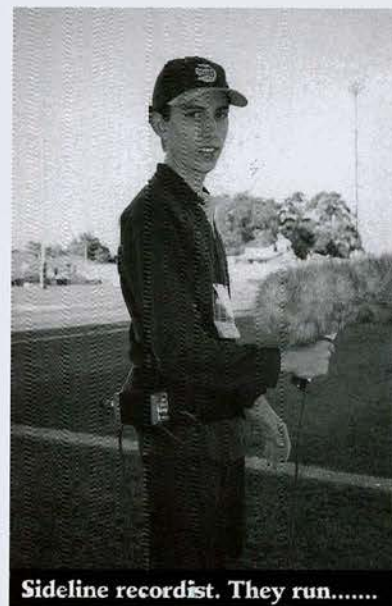
"For the last few years, we've been putting a mic on the referee. Before we had a split in the competition, we always had a mic on him, purely for us and the commentators to hear the decisions. We never put it to air. This year, Super League want the referee's remarks to be heard. We pick and choose what we air. That's another Sennheiser radio mic with its own channel."



Peter Laird, audio chief - at the desk

Laird is always working live, even when it's being recorded to tape, so there are no second chances. "Some of the risks are radio mics dying on air, but we've got great radio mics these days," he says. "And we get the occasional foul word that you can't really want to hear, as you would get from a footballer.

"I have some stuff premixed and balanced, which comes in on faders. I'm always mixing this in and out, depending on whether we need to hear the ref, depending on whether we need to hear the near or far side of the ground, wherever the call is. I'm constantly watching the picture to see where they are. When they're on the near side, I put that up. When I hear the whistle go, I usually put the ref up so we can hear the decision. If the commentators are interested in hearing it, we now put that to air, they will pause their commentary, and



Sideline recordist. They run.....

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Laird uses a compressor limiter, and a Sound Performance Lab stereo vitaliser to put across the crowd effects, to brighten it up and make it sound thicker.

Little problems come up during the afternoon. Number 1 mic on the roof, Number 2 at the van, and Laird is trying to fix that. He is sorting out some international feed for TV3/NZ. "Because the mixer is so limited," he says, "we've grown out of it, it's too small, and I'm just trying to find ways around it. I need more inputs, and outputs as well."

When I leave Laird he is testing the shock mount on the ref mic, then establishing the gain structure and fiddling with levels on the far and near side mics. And he still hasn't had his chicken.

Sound assistant

David Macgregor-Jones does everything outside of the audio truck. He sets up the sound in the commentary box, the effects on the roof, and on the field. Out on the field, he shows me the little area with a TV monitor where the sideline producer sits. With his communication panel, he can talk to director, producer, commentators. The radio transmitters are on a stand and there are a couple of hand mics around, used for sideline interviews, or sideline commentators.

In the commentators' booth, high above the field, are a couple of positions. The commentators have Coles lip ribbon mics. David explains that, "We use them because they reject the other noise so well, very sensitive. They're very old, developed by the BBC in the 40s for broadcasters."

Commentator Ray Warren has a headset mic, so he can hold his binoculars. Beside them, a statistician sits with a computer, scoring and also communicating.

The producer sits slightly behind the commentators. He has monitors to see the graphics as they are being typed up, and what is going to air. From his communications panel, he can talk to everyone. There is a telestrator, so they can draw diagrams over the sports action.

Communications

Greg Bennetts seems to be the busiest person around. "You've got tape operators in there, directors in here, and cameramen in the field, and the ads are being inserted back at TCN," he says. "Everyone has to be able to communicate. So I'm wiring all the trucks together, connecting into the circuits into Sydney, getting all the radios up, making the box out on the sideline work. I've got wires everywhere." •



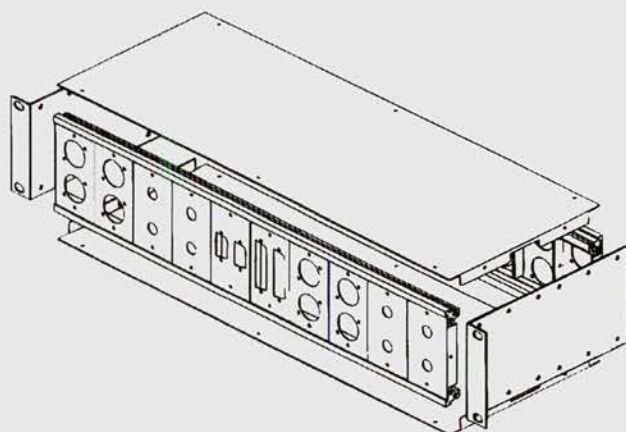
Dallas Konitz, O/B engineer

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Making it endurable

BY Dan Cole

Administrators and benefactors of The New Children's Hospital at Westmead in Sydney have put a lot of time and effort into making a stay in hospital for a child as pleasant and interesting as possible—it has an in-house radio and T.V. broadcast service. Connections went and had a look-see.

What a surprise to find such a service in a hospital! The Starlight Express Room is where it all happens, a place where more able patients can go and hang out and be part of in-house TV shows or just play with the multimedia, Nintendos etc. From here TV and Radio is broadcast to all wards and public areas. I spoke to Captain Starlight (AKA, Hugh Munro) about the set up—he works full-time co-ordinating activities and programs for the vision side of the operation.

'The Starlight Express Room is a haven within the hospital where children can be themselves. The room offers entertainment through art, craft, television—a enjoyable distraction for patients who are in pain, bored, apprehensive or lonely.

'The room also helps take the pressure off staff and families, particularly when trying to coax a child back to hospital for a further stay and treatment.'

The Starlight Express Room has a small stage and a control room attached—it's like a TV studio floor and the ceiling is rigged with luminaires donated by Channel 9.

Captain Starlight says the mood of the day is set with cycloramas and studio lamps are fixed in place with lighting states marked on the board.

'We have designed everything simply so volunteers can work it.'

According to captain Starlight it is an advantage being a low-band system. He says that the VHS system picks up most things whereas a hi-band set-up might ruin the mood with too much light. The audio/vision side of the operation is neat and well equipped.

Channel 9 technicians designed and installed the room including switching and routing, and suggested much of the studio equipment.

There are 350 monitors in the wards, the Starlight Channel runs movies all day with live to air segments such as special guests or activities such as cartoon drawing.

'If a movie is half-way through and something is happening live we switch it over. If it's a craft orientated activity we might run a split screen which the patients can watch if they want.

'We don't have a schedule because if a child is called away for a test or operation they might get stressed because they are missing out on a show. We take requests but you have to be first in first served. We also do ads for the hospital such as what's on and topics such as a Mental Health Week—we'll be doing brain teaser type games, so we theme things.

There is a steady stream of volunteers through the room which Captain Starlight is enthusiastic about. 'Kids come in here and suggest a show and then we let them make it. One volunteer comes in once every six months and runs his own program called "Karaoke", where patients from the wards call in and tell jokes.

• **You can volunteer!** Call Captain Starlight on 02 9845 3601



Civic Theatre Lives On

BY JACQUELINE MOLLOY

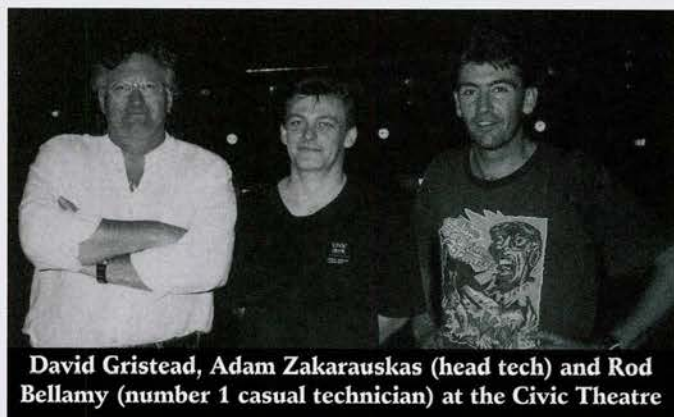
In 1989 the city of Newcastle in NSW was the scene of a disaster after suffering a devastating earthquake. The damage to the city was extensive with many buildings ruined or severely damaged. One of those was the already run-down Civic Theatre.

After the earthquake struck in 1989, \$10 million dollars was dedicated to the refurbishment and the Civic closed for about eighteen months; re-opening in 1993 as a fully equipped modern theatre.

In the past four years the Civic Theatre has established itself on

stage. This place had an image of being inaccessible and we've changed that, we now get a lot of positive feedback from productions coming through. There's still a lot to be done".

Like a lot of venues that have had refurbishment work done the Front-of-House areas are quite stunning whilst backstage still needs work. The council has recently purchased the arcade that adjoins the theatre on the backstage side, with plans to expand. At the moment the arcade provides storage space and eventu-



David Grinstead, Adam Zakarauskas (head tech) and Rod Bellamy (number 1 casual technician) at the Civic Theatre

ally will house a much needed workshop. There are also plans to upgrade the loading bay and the flying system. Grinstead hopes to add 15 more flylines to the 50 line, single purchase system, with the first five being installed this year.

An unusual aspect of the Civic which also makes upgrades a lot easier than in other venues, is the number of ticketed tradespeople they have amongst their casual technical crew.

Within the casual pool of around 45 there are 3 electricians, 2 welders, 2 fork lift operators, several glaziers and plasterers and a rigger's ticket almost completed. A very useful grab-bag of skills to have backstage!

With very little money they have created an excellent space for touring management and crew. Equipped with all the usual facilities, it is a big converted space just off the stage entrance.

David Grinstead, a man of considerable energy and lust for life, has been a part of this reinvention for the last couple of years. He is a Canadian who came out here with an illusion show and within ten days of being in the country he was working with Gordon Frost as a production manager on *Grease*. He stayed with Frost for three and a half years then worked at the Footbridge Theatre for a year and then did a short stint at the State Theatre.

Grinstead is the Technical Services Manager for the Civic and he frequently gets asked the question of why he is in Newcastle. "I get bored very easily and I like a chal-

The Civic crew have also built their own thrust stage!

The auditorium of the Civic seats around 1500.

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The FR Series Engineering Team is supervised by Greg Mackie and headed by Cal Perlins. Cal has definitely written his share of modern amplifier history. He received a degree in electrical engineering at CalPoly. After a stint at JBL, where he specialised in 'blowing up speakers', Cal went on to design and build amps for Marantz amps and powered mixers for Fender; and contributed to what eventually became Ramco's line highly respected contractor amps. Cal went back to JBL and helped develop their EON™ line.

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The Sound of 1000 Toilets Flushing



Logistics of Madame Butterfly

By Madeline Murray

While Peter England and Russell Cohen were still design students at NIDA, they started work on *Madame Butterfly*. They were also designing the Handover Ceremony at the Atlanta Olympics. (Whatever you may think of it, it was memorable. The inflatable roof, the helium filled Opera House, the shocked Sydneysiders. .)

England and Cohen practice an enlightened freeform collaboration as designers. England has just won a \$30,000 Mike Walsh fellowship to study/work abroad. Not bad for a young man who graduated in Landscape architecture in '86.

Madame Butterfly has been a sell out show for Opera Australia. Most of the action took place on a large wooden platform, surrounded by a moat of water, and connected to the edges of the stage by straight wooden bridges.

The surrounding walls were panels of eleven screens, which moved up and down in various configurations. Beyond the screens was a sky, which was flooded with changing colours, and became a starry sky at times.

The restrained elegance was like traditional Japanese architecture. The proportions of the space, and the screens had the satisfying simplicity of a Zen temple.

At one point, a hundred candles floated on the water. Later, thousands of cherry petals fluttered down from the slits in the ceiling. These organic interruptions into the sparse space had a stunning emotional effect, perfect for a tragic opera.

The end had me and my friend in tears. What more can you ask for?

How it worked

Behind all that elegance was a lot of logistics. Opera staging is a nightmare because the shows turn around every day. So no matter how brilliant your design is, it has to be practical to strike and put back together easily.

In *Butterfly*, a central 1200mm spine runs along the wooden 8x8m platform from downstage to upstage. "The central truck breaks into two pieces, the way a

Harrier Jet fighter plane works," England explained. "The panels of the floor either side of the central spine butterfly up in the air. It can then be wheeled backstage, and taken down the lift. The truck becomes 3.5m high in the folded position.

"With a matinee, they have 4 or 5 hours to strike and set up a new evening show. I guess that's a limitation, but the way that company works, they seem to turn it into opportunities. They are constantly thinking about storage, and touring."

Space was so tight in the wings that props were only set for one act at a time. All sharp edges were padded and taped so that the grand silk costumes wouldn't catch.

Six tonnes of water

The six tonnes of water sits on a series of fibreglass trays shaped and painted like pebbles. Beneath that is pool liner. The water gets drained during a ten minute instrumental section near the end of Act Two.

"It was quite a challenge getting rid of the water, and not having the sound of 1000 toilets going off," England said. "The start off of the water draining, and the echo of it arriving in the tank was the worst problems. We tried stuffing the pipes with cloth to muffle the sound, but that didn't work. We solved that by draining slowly, and having the outflow end of the pipe deep in the tank."

The water is drained into a tank below, and pumped up for the next show. It is filtered, chlorinated, and changed completely every five shows.

Another challenge was the screens. Eleven screens around the stage were raised and lowered during the show to different heights. They all had to line up, or form patterns. Each one was operated individually by a series of pulleys. The problem is getting eleven people doing the right thing at the right time.

"Really I don't think there was that much technical difficulty," England said. "The back wall flying out, and coming back in again was hard. That was quite a large amount of scenery to get to fly, as smoothly and as discretely as possible. We didn't really want it to be like a Wagnerian wall flying out, but we wanted it to float, and disappear as simply as possible."

The back wall was covered in tiny points of light, so the fibre optic light source, and the overhead lighting bar had to be flown out as well.

"That's an amazing sequence," Dominic Hamra, the Production Manager explained. "The white screens

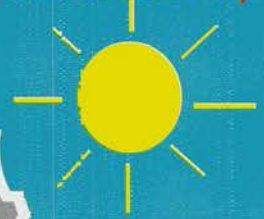
The six tonnes of water sits on a series of fibreglass trays shaped and painted like pebbles. Beneath that is pool liner. The water gets drained during a ten minute instrumental section near the end of Act Two. "1000 toilets going off,"

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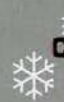
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were flown out, the green wall flew in, the operating line for the white screens was disconnected. Then there's a sequence of about five flying cues, that are done behind the screen, that have to happen in 45 seconds. The flymen are fantastic. It all looks very simple, but the way it works is quite complex. The fibre optics were supplied by GUVT, who did a fantastic job."

"A lot of planning went into how it worked, and it paid off in the technical side," England said. "The tech department at the Opera Centre are incredibly skilled, and obviously know the Opera House theatre and its limitations very well. Russell and I had a studio at the Opera Centre, so we could have technical discussions with OA people anytime. The technical collaboration is so important. The more you talk before, the less problems you will probably have. The tech staff tend to not look for the problems, they look for the opportunities in the work. They are very encouraging. 'Impossible' is the last thing you'll ever hear."

Lighting

The Opera Theatre has very little wing space, and the designers wanted to light all the side screens, and create the sense of a space floating on a hill. Robert Bryan, the lighting designer, wanted softness, and no hard edges, but he had very little room to work with.

"The way I lit the show was determined by the way it was designed," Bryan told me on the phone from England. "I had to deal with a box. It was not a surprise, because we had talked about it the year before. Sometimes, the LD is just presented with a finished design. We talked about how a scene would look, and it was one of



Russell Cohen



Peter England



Robert Bryan

those rare occasions where it ended up looking like that. That was very encouraging to us all.

"Those screens, made of rear projection material, were an enormous feature, but they also created a lighting problem. You couldn't get any crosslight into the acting area. That was a problem, although it was a bonus visually.

"I solved that by putting a lot of light behind the screens. There's a lot of equipment back there, in a very small space. A lot of money was spent on Rainbow Scrollers CCUs. With 11 screens to light, we had about 30 CCUs. We used 10 colours in them, because it's easier to use on the lighting control. OA had a few CCUs, but they were prepared to buy more, because everyone went along with the design concept."

The Opera made special boom trolleys that put the light above people's heads in the wings. "From the off stage end of those trucks, you only had 1.5m" Hamra explained. "The trolleys were on castors. They just push in, do a quick point, and they're ready to go. Everything's on wheels. They just plug the boom trolley into their designated dimmers."

Bryan had to avoid any light spill onto the water. Other times he had to light the water, and take down the acting area.

The colours which glowed on the screens, or saturated the walls were very beautiful. "The colours were determined by instinct," Bryan said. "I'm a very instinctive LD. By listening to the music, and talking to the designers, the colour comes out of what I feel is right. It's very hard to explain."

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Write in Reader Service Number: 112

Duncan Fry

Algis Renkus, 1937 (or thereabouts - he'd never tell you) to 1997

Back in August, the pro audio world lost one of its true characters. Industry personality Algis Renkus, son of the late Jonas Renkus, died suddenly from a heart attack.

He and his father were originally half of Renkus-Heinz, and at ARX we came to know Algis when he ran Emilar, an innovative Southern California speaker manufacturer. We had sent him some money for an order of compression drivers for our first run of speaker cabinets, and he phoned us at the factory to say that we had paid him too much! You've got to like a guy that does that!

From that time onwards we became good friends, and Algis was instrumental in launching ARX on the US market. I'm sure that everyone who knew him has a list of anecdotes, and here are some of my favourites.

On holiday there in 1986, I thought I might pick up a couple of digital reverbs cheap. I rang Algis and asked if he could get them for me.

The total for the two came to about \$950, about half their price back home.

"How are you going to pay for them?" he asked "No worries," I said, "I've got a bundle of cash here," and I plopped \$1000 onto the desk. He looked horrified.

"Cash?" he croaked. "Cash? What am I gonna do with cash?" I couldn't believe it. This was my first introduction to the US world of plastic. I couldn't imagine that anyone could possibly *not* want cash! Algis looked more and more flustered

"Now let me see, I can't take it home in my pocket, I might lose it or get mugged, I can't take it to the bank, they're closed, I can't leave it here in my desk, the cleaners might take it..." and so on.

Eventually we managed to sort it out. Algis took the money, rolled it up tightly with elastic bands and put it in a little ziplock plastic bag, and stuck it in the used coffee grounds inside his office coffee percolator!

Escaping the Nazis, Algis and his parents had come from Lithuania during WW2, and although to us Aussies he just sounded American, to other Americans he must have had a slightly foreign accent. He lived in Silverado, a

tiny hamlet out the back of Orange, which was populated by a mix of ageing hippies, good ol' boys and the Silverado Militia!

Looking for his house one day, we asked for directions from a couple of his neighbours who were just a sittin' and a drinkin'. They said they'd never heard of him, although it turned out they lived 3 doors from his house.

"You must know him," we persisted, "He has a wife, and a little daughter..." "Doh," they said, slapping their foreheads, "you mean the German guy!" When we told him later, his only comment was "Those assholes!"

He had the driest sense of humour of anyone I ever met. After the NAMM show one year, Colin Park and I were arrested in Tijuana one year for drinking in the streets. Algis was stunned when we recounted the story to him once we were safely back in Anaheim, behind the Orange Curtain.

"Arrested in Tijuana for drinking?" he drawled, "I can't believe it. Hell, you could f**k a donkey in the street in Tijuana and no-one would care!"

"I really gotta start hanging around with you guys - you have so much fun!"

Another time we had found an 'All-you-can-eat for \$7' Japanese restaurant, and were telling him about it. "Where is it?" he asked. We described its location. "Oh, *that* place," he said, "Yeah I know it; you can smell it from six blocks away!"

Mark you, when he was buying it was a different matter. "Let me take you out to dinner," he said to Dave Park and myself one night, waving his arms like Daddy Warbucks. "I've found a restaurant I know you'll love."

"This'll be good," we thought, as we got into his car. "We'll get to try some *real* California cooking."

"OK we're here," he announced a couple of minutes later, as we rolled up at an 'All you can eat for \$3.99' spaghetti bar!

Quite literally, though, *everyone* knew him. The owner of many audio patents, in recent years he had invented a radical new method of manufacturing compression driver diaphragms, and would haunt the aisles of trade shows



accounting people and saying, "Have you seen my new diaphragm?" and thrusting it into their unsuspecting hands. The impression that it was some form of birth control was not helped by the unit being made from a kind of pale pink plastic!

After an NSCA exhibition one year, Algis and I were having dinner with Miguel, our ARX distributor from Puerto Rico.

"Algis," he asked, "Can you get me any Haybaylay speakers?"

Algis looked at him. "What brand did you say?" he asked "Haybaylay," replied Miguel.

"I've never heard of that brand," said Algis. "Have you, Duncan?" he asked. I shook my head. "No, never" I said, "It's a new one on me."

Miguel looked agitated. "Oh no, you must have," he said. "Eez a very well known speaker. Very famous everywhere. Everyone use Haybaylay."

Algis shrugged his shoulders and returned to his salad. Crunching away on a handful of his ever present vitamin tablets, he looked up at Miguel. "I tell you what, Miguel," he said, "Write it down for me and I'll check it out, ask a few people. Somebody must have heard of them if they're as popular as you say. Here, write it on this." And he pulled a piece of paper and a pen from his pocket and gave them to Miguel.

Miguel took the pen and wrote in big letters 'J B L'. Algis and I looked at it for a couple of seconds and burst out laughing, because, of course, Spanish speaking people don't say Jay Bee Ell, they pronounce it Hay Bay Lay!

"Oh, *that* HayBayLay," drawled Algis. "Yeah, I think I should be able to track down someone who knows about this company. It might take some time, though!"

Sadly he's gone now, and the world is a duller place now than it was when he was here. He'll be missed by many of us.

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Write in Reader Service Number: 171

We'll fix it in the mix...

Film sound, by Madeleine Murray

And they do!

Shot on location around Sydney, *Doom Runners*, a post-apocalypse futuristic kids film posed all sorts of problems for sound recordist Guntis Sics. Wind, rain, hail, fork lifts, quarry trucks, airplanes, jet cats, you name it, he recorded dialogue over it. He was very philosophical about it, as most sound recordists seem to be. And they're right. You can't throw a tantrum because the location is chosen for the look, rather than the sound. It is much easier and cheaper to alter sound in post, than it is to alter the visuals.

So I decided to follow the progress of *Doom Runners*. I got a grasp of the location sound problems, then went to visit post facility Tracks to see how they dealt with them.

On location

"We shot almost all of it outside, places like the headland of Wattmalla beach, which is the windiest place on the east coast," Sics said. "It's got low shrubbery, because of the high winds. They used it as a futuristic landscape, and that was very difficult to shoot in, for everybody. And I've never been on a shoot where we got dumped on so much. It was always raining, or hailing, or gales.

"The first week we were at Prospect Quarry, and obviously for me, that was extremely difficult. It would be too expensive to shut the quarry down, so we just shot with that stuff going on in the background. That's really challenging, radio mics all the way, and trying to squeeze in dialogue between 50 tonne trucks. The gravel crusher was running 24 hours a day.

"We shot in the old embattlements at Middle Head. That was a good week, because we had Tim Curry [*Rocky Horror*] out, and he has one of the most amazing voices on the planet. He was also wearing a full length leather coat buttoned up at the collar, which makes it really tricky to put radio mics on. We manufactured a little ridge for it to sit under."

Radio mics like natural fabrics, and they don't like a lot of rustle. Futuristic films are inevitably costumed in hi-tech materials. The sets are usually built from wood sprayed to look like metal, so the sound recordist has got creaking woody noises to deal with. "The designer had plastic all along the walls," Sics said. "That looks fantastic, but as soon as anyone touches it, it ripples, and that's a pain for me. Dr Kato had a lab built of wood, which was supposed to be metal. Everytime he took a step, it creaked. Post can work on it after, but it's up to me to try and avoid those sounds over the dialogue. There was aircraft, and the jet cat going by, which rumbles under the headland.

"There were sound problems, but I'm happy to work around it as much as possible."

Gear

"The boy and the girl were the main characters, and because they're Americans, and they ad lib a little," Sics said. "I used a lot of radio mics. I use Lectrosonics UHF 195, which are fantastic. They worked beautifully on our heroes. You could hide the mic easily on their clothes. With children, their voices aren't strong enough for a boom often. When they are dialoguing with adults, you get a matching problem.

"In Middle Head, we used a lot of radio mics, because it was quite low. We had a lot of sandstone ceilings, so you couldn't even get a boom in. Plus it was quite a live environment, with all the reverberations of the harbour noises.

"When we got outside, it was harder for radio mics. It was always windy, at places like the headland of La Perouse, and Bear Island. We were at a 4 wheel drive park as well, to shoot all the sand dune things. It's directly under the flight path. The planes are 50m above you, with their wheels down. We had a three minute window period, to shoot a scene that was two and a half minutes long."

Sics used his Sennheiser 416 or 816, depending on the reach needed, for these scenes. Inside he used a Schoeps MK41. "It matches really well with my radio mics, especially in live rooms. And I love the sound of it. I think that the Schoeps has got the most modern sound of all the mics. It's slightly colder, as opposed to warm, and I

"It's directly under the flight path. The planes are 50m above you, with their wheels down. We had a three minute window period, to shoot a scene that was two and a half minutes long".

love that. It works extremely well in live situations. I've always used it in bathrooms and things like that. It's a very forgiving mic for swinging, because it's got a slightly wider pattern. That's good if you can't predict which way an actor is going to move, which is often the way.

"I use a Cooper108 mixer, which I think is the best in the world at the moment. It has the nicest pre amps in it, which is the main stage of quality. It can put up with high level and low level very easily. And it has a really good gain structure."

Preparation

"When we don't have a lot of time, we have to shoot it, and get on to the next shot. You lose the possibility of going again. Sound generally gets overlooked when they ask how everyone went after a take. I knew the circumstances

from the beginning on this one. We were only shooting for five weeks, and using two cameras, one wide and one tight. That's ok, as long as I know what to expect, and can plan it. These days you can plan and achieve very good results.

"It really helps to learn a lot about other departments. It opens your eyes to see that you're not the only one with a problem. I try to be philosophical about it. Years ago I wasn't! I like to do my homework before a shoot, so I always know what to expect. If I get a surprise on the shoot, I feel disappointed. I want to know all about the locations, the actors, and the psychology of the workplace, which is extremely important. I like to be so prepared about that, to the point that what equipment I use is almost secondary.



Steve Murphy, dialogue editor

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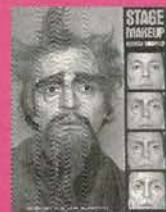
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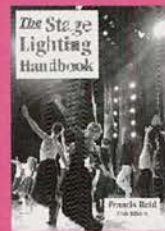
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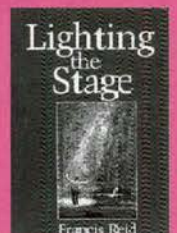
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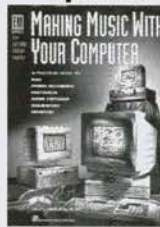


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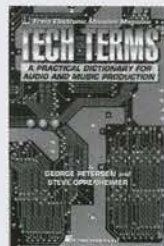


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\$55

By Francis Rumsey.

A complete guide for students, operators and engineers on digital audio and associated technologies. Contains vital information on MIDI control and computer soundcards, audio workstation principles, mass storage devices, files transfer and networking, audio interfaces and digital video. Similarly, those involved in the computer industry needing a greater understanding of high quality audio. 284 pages, 1996.



Live Sound Mixing

\$35

By Duncan Fry.

A 'hands on' manual in its second edition, Live Sound Mixing is for anyone wanting information on the basic principles of how a PA system works and details on trouble shooting when it doesn't. Covers EQ, processing, mixing, soundchecks, effects, monitors, plus what each knob does, why and when to turn it. 176 pages, 1992.



Sound Reinforcement Handbook

\$69

Written for Yamaha by Gary Davis & Ralph Jones, this handbook provides a useful reference for those wishing to learn about the basics of sound reinforcement. Presented in an easy-to-read format with clear diagrams and an index, this manual is a must for anyone working to bring better sound and music to the world. 412 pages, 1989.



\$48

Concert Sound

By David (Rudy) Trubitt.

For all those interested in the sound reinforcement field. Full of useful information on specific live sound topics and profiles of individual tours including U2, Stones, Van Halen etc. Covers monitor mixing, drum & guitar miking, noise regulations, computers in live sound and career development. 166 pgs, 1993.



Effective Audio-Visual

\$65

By Robert Simpson.

An audio-visual user's handbook detailing equipment and techniques. This third edition demonstrates how the computer is fast becoming an effective show delivery platform in its own right. Applications covered are business presentations, conferences, training sessions, museum exhibits, visitor centre displays and multimedia applications. A useful asset to anyone with an interest in the audio-visual world. 255 pgs, 1996.



Hums & Buzzes Explained

\$9

By Laurie Nethercote.

A small handbook written in plain English for sound engineers and musicians. Explains earth loops and magnetically induced noises. No maths, no formulas, just down to earth trouble shooting tips! Includes: Project - build your own transformer isolation unit. 30 pages, 1993.



Making the Ultimate Demo

\$49

By Michael Molenda.

Outlines the process involved in the successful recording and marketing of your demo tape. Packed with tips from industry professionals on vocal and instrumental tracks, signal processing, mixdown and budgeting. Also advice on how to market your demo to the record labels without wasting your time. 128 pages, 1993.



Sound for Picture *Edited by MIX Magazine.*

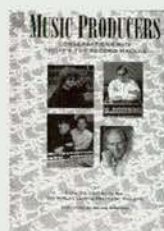
\$39



Takes you behind the scenes as top sound professionals reveal how dialogue, sound effects and musical scores are recorded, edited and assembled. Case studies include Terminator, The Simpsons, The Doors and Northern Exposure. Ideal for audio engineers, recording students, aspiring sound operators plus film and video enthusiasts. 134 pages, 1993.

Music Producers *Edited by MIX Magazine.*

\$39



Popular recording techniques have changed dramatically in recent times effectively bringing the outside world into the realm of music. This has resulted in a marked transition in the role of the record producer. Music Producers contains 24 interviews with today's top record makers giving a broad view of the ways in which they create their audio images. 128 pages, 1992.

Electronic Projects for Musicians

\$39

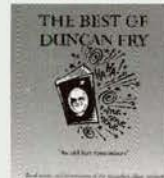
By Craig Anderton.



A comprehensive guide on how to build your own Preamp, Compressor/Limiter, Ring Modulator, Phase Shifter and Talk Box along with 22 other inexpensive electronic accessories. Written in clear language with hundreds of helpful diagrams & simple step-by-step instructions. Includes free demonstration record of electronic effects. 220 pgs.

The Best of Duncan Fry

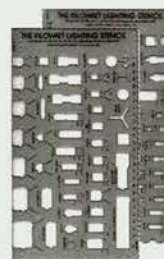
\$12



Connections Magazine popular columnist Duncan Fry chronicles his road stories, including some XXX rated, never before published! Dunk writes about life at the gig, after gig, and nowhere near the gig - it is sometimes a chronicle of the world through his eyes. Duncan ran his own PA and Lighting rigs through the "golden era" of the Australian Rock Industry. Today he is co-owner of ARX, the Australian PA equipment manufacturers. 100 pgs, 1995.

Lighting Stencils

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Control Systems For Live Entertainment

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By John Huntington.



Demonstrates the use and integration of computers in the control and coordination of lighting and sound equipment. Includes the basics of control systems, data communication concepts and networking; case studies of problems and solutions; in-depth discussions of important topics like SMPTE Time Code, MIDI, MIDI Show Control, MIDI Machine Control, CMX512, Medialink and many others. 292 pages, 1994.

Studio Seconds

\$19

By Tom Lubin.



A detailed handbook designed for those interested in music and sound recording. Covers basic principles for the beginner and advanced methods for the audio professional. Also includes techniques for the smooth running of recording sessions and features a humorous look at the development of magnetic recording. 154 pages, 1991.

Music Business

\$49

By Shane Simpson & Colin Seeger.



A book about the business side of the Australian music industry by two top industry lawyers and deal makers. Shows how and why things are done as they are in the industry & what to watch out for in negotiating deals. A comprehensive guide for both the novice and the industry professional. 496 pgs, 1994.

MIDI Systems & Control

\$55

By Francis Rumsey.



2nd Edition. Provides a comprehensive coverage of the principles of MIDI control and how it can be implemented in practical systems. Useful for those interested in design devices with numerous diagrams and illustrations. Deals with MIDI in studio, musical and lighting equipment, mixer automation plus information on the latest additions to the MIDI spec. 262 pgs, 1994.

Modular Digital Multitracks

\$49

By George Petersen.



A personal guide to new recording industry technology with analysis of systems such as Alesis ADAT, Tascam DA-88, Fostex RC-8, Akai A-DAM and Yamaha DMR8. Explains features that aren't mentioned in the manufacturers' literature, reveals secret button pushes and explains maintenance and auto-diagnostic procedures. 120 pages, 1994.

Modern Recording Techniques

\$49.50

By Huber & Runstein.



A comprehensive recording guide which addresses the area of project studio recording - the new base of home music production using multitrack, hard-disk and MIDI technologies. Perfect for the student of professional recording with easy-to-understand descriptions of the toys, tools and day-to-day practices of music recording and production. 4th edition. 500 pages, 1995.

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"*Doom Runners* was ultimately very satisfying. We worked hard, and I think we got a lot of good sound. There wasn't a proper studio, so we just used a garage in Camperdown, very noisy, with traffic and airplanes and forklifts in the next warehouse. The last week's location was at the paper mills, across from the container terminals, with forklifts all day, and semi trailers in the distance. On top of that it rained a lot the week before, and there was water dripping all through the warehouse shoot."

Post at Tracks

Doom Runners was always meant to have a lot of sound work done in post. Steve Murphy, the dialogue editor, is working in a windowless room, lit only by his computer and film screen.

One of the options of dealing with flawed dialogue is ADR, additional dialogue replacement. This is expensive, because the actor has to be brought into a studio to replace lines. Tim Curry's ADR is being done in Los Angeles. With *Doom Runners* over 500 lines have been re-recorded, which must be most of the 90 minute script.

Murphy is cleaning up what is left of the usable dialogue. He is working on a scene shot in the Camperdown warehouse, and getting rid of the water drips. The dialogue is shown in graphic levels on his computer screen, and he is cutting out every drip between lines. A bizarre job... Another problem is noise from one direction on exterior locations. When the director does the reverse of a two shot, one actor's dialogue will sound fine, and the other's will have background noise, because the mic will be pointing in that direction. So the dialogue doesn't match.

Murphy is reducing the noise in between, or after words. These problems can also be dealt with in the mix, by equalisation, or background noise reduction devices.

He is using the Fairlight MFX, the standard equipment at Tracks. "One of the advantages is that we mix on Fairlight, so we don't have to transfer to any other track format," he says. "It doesn't really matter to me which system I work on, because they all basically have the same capabilities, whether it's Fairlight, Pro Tools, or AudioVision. I've used all the systems. The Fairlight is great, because it's very fast, and easy to use. Some of the dialogue cleaning that I'm doing here, would be slower on other systems."

Ominous rumble wind

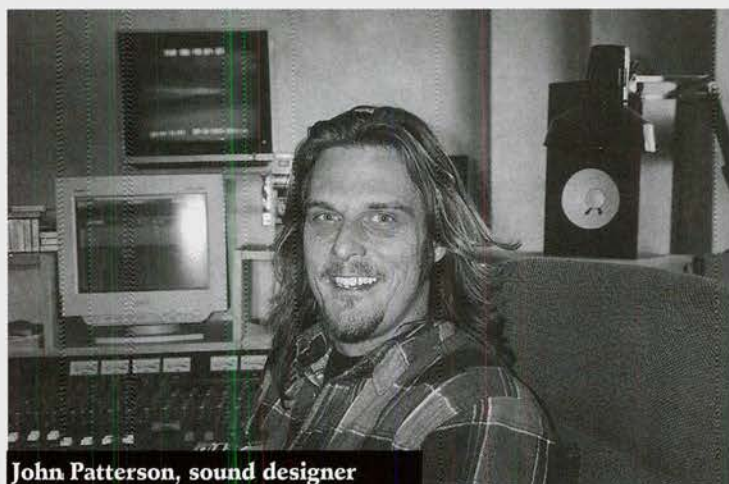
John Patterson is sitting in a room with a window, working on the sounds that will save *Doom Runners*. "We're lucky that it's a Sci-fi show, which gives us more scope," he says. "I'm filling the background with volcanic rumbles, and sounds that are in the same frequency as the trucks that Guntis had problems with."

Patterson is using a Fairlight MFX3. "It's generally considered the Rolls Royce of track laying machines. And it's being used around the world. It's invented in Australia, and we're very proud of that!"

He puts a close up of a girl talking up on the screen. "Hear that hummy rumbly noise in the background? That is probably trucks, but it could easily be wind. Guntis is out in a quarry, with no protection from the wind."

Another example is a long shot of five people running across the frame. The wind sound is very loud here. "There is so much wind noise, he doesn't have a hope of getting anything decent. Their footsteps are unusable, so they are doing Foley of footsteps, bag carrying, clothing rustle, and all the noises. The sound of this shot will be completely replaced."

Patterson puts on another shot with dialogue. "I think I can hear a jet in there, and a bird. There's not supposed to be any birds or animals, because it's a post apocalyptic era. To get around these



John Patterson, sound designer



Guntis Sics, sound recordist

problems, I get in, and I lay up these sorts of sounds.

"I have a volcanic rumble, quite a close sound. And there's a more ambient wider rumble. Put them together and those two sounds will obliterate any background problems, over those frequencies. I also have deep bubbles, because it's another world. The earth is unstable, so the deep bubbles give a bottom end to that. And I use what I call ominous rumble wind, which is a slightly spooky ambient wind.

"Winds are good, because they have movement in them, and that can help with background problems that move, like a truck going past. You can obscure that sound changing pitch with the wind changing pitch. I also have a sterile wind that I made on my synthesiser, because this is a sterile dead world. And I have a sound called ground sucks and bubbles, which is pretty much as it says. I gotten a lot of volcanic effects, and distorted them. When you run all of those elements together, you get this extraordinary cacophony, which has movement, is dead, and gives the impression that there is something going on with the planet. It will sit under the dialogue, and there's no way you can hear the background problems. It'll be modulated in the mix.

"In cinema, things have to be larger than life. When you record a sound, it tends to sound quite ordinary. I take several sounds, and combine them to make an effect. Anything Guntis has recorded, I enhance and make larger, more cinematic and more interesting."

We then watch some bad guys, called Doom Troopers, riding around on Hovercraft motorbikes. "We removed the real motorbike sound. I replaced it with rockets, and jet packs, and sci-fi sounds."

This is a world without electricity, and the people get their light from fireflies. So Patterson has taken the sounds of bugs, and distorted them. •

PROTALK!

The studio power amp

Usually found in the extremes of most control rooms collecting dust yet powers-on day in, day out (hopefully). What brands are recommended for this thankless task, how are active monitors amp'ed, how crucial are power-amps in the recording environment? These were some of the questions asked in this month's ProTalk forum, compiled by Dan Cole

Barrie Clissold from **Wombat Rd Studio** (VIC): 'We use an old but reliable Sansui AU-9000 Stereo amp for driving our Tannoy monitors as well as our NS-10 Yamahas. It's an old thumper of an amp, probably the biggest and most bullet proof amp ever made for domestic use (by Sansui at least!). It has an output rated at 120w R.M.S. per channel but due to the massive power transformer and power supply can deliver this easily. We use only the power amp section as the pre-amp stages do introduce some colouration. Its frequency response, lack of distortion and damping factor are all very good!

We have tried some newer amps but have gone back to the old AU-9000, it just seems to do the job and not causes any concern! In the entire complexity of a recording studio the monitor amp is probably the least likely link in the chain to cause any significant problems unless it is prone to self oscillation or can't handle the power requirements of your monitors. We use separate amps for headphone and performance area monitoring.'

Ike from **Darling Harbour Studio's**, (NSW) says studio amps are 'absolutely critical because it is the difference between hearing accurately or compensating for losses with EQ'. Whilst he did not specify brand of monitors they are active and are amp'ed in parallel. 'Brook amps are good; they are smooth and have the mosfet style we like and are housed in an amp rack room.'

In closing Ike suggests: 'Depending on the speaker, design of the room, the amp is part of having an accurate listening environment.'

Paul Bryant from **Paul Bryant Mastering** in Silverwater (NSW), 'The monitor speakers and monitor amplifier are the most important pieces of equipment in a studio. You must be able to hear exactly what you are doing. It is also

important that the amplifier is a good match for the speakers, this is why active monitoring is becoming so popular. I am currently using Chevin power amp which is clean, quiet and has enough grunt to vaporise NS10s as required.

I would like to have active monitors in the near future as this offers higher efficiency and optimum crossover characteristics, however active monitoring requires much more setting up and alignment than passive and should be done by an expert.'

Greg Dixon from **Aphex Studio** (NSW) says: 'Power amps are very important as your monitoring is crucial to how well you can mix and track sound. The amp needs to be of higher power than your monitors as you need plenty of headroom to keep things clean and accurate. The amp can't be noisy as this will render you unable to tell what noise is on the recording and which is from the amp.'

I don't have a favourite brand but have been very happy with our Perreaux which has been working flawlessly for over 10 years now. It is situated at the bottom of a rack with 3 rack spaces clear above to keep it well ventilated.'

Jeff Cripps from **A# Sharp Recording Studio** (NSW) said: 'I put off buying a decent power amp for a long time, purchasing more obvious things like mikes and reverbs; when I finally purchased an amp it made a world of difference to my mixing — especially the bottom end. Rightly or wrongly I decided to purchase a brand from the Hi Fi world and not the recording world — I reasoned that audiophiles are more particular about sound than studio gear manufacturers and studio owners.'

I can tell by some of the mixes I hear that the mixer is not getting a true picture of what is coming off tape. For the same reason that

I would not buy from a shop that sold washing machines and heart pacemakers — I wouldn't buy powered speakers. If you're serious buy both independently. The power amp I use is an Australian brand called M.E.'

Marshall Cullen from **Damien Gerards**, (NSW) says that the type and power of studio monitor amps is critical 'as they supply the signal to the monitoring system and therefore affect what you hear.' He says critical decisions depend on clean, uncoloured amplification.

'In theory nearfield monitors cancel out the need for a tuned listening environment. In a traditional control room, main monitors are often tri-amped, that is, a separate amp for the lows, the mids and the highs using an active crossover. (A passive crossover is a circuit of chokes, coils, capacitors and resistors usually within the speaker enclosure which splits up the amps signal to the various frequency drivers, so obviously the amp must run "full range" when powering a passive system).

'A relatively new idea with studio monitoring is to have the amp and speaker in the one unit such as the Genelec Series, Meyer, a new ATC addition and numerous others. This offers the advantage of the amplifier being perfectly matched to the drivers and no wiring problems, speaker cable loss, phase inversion and so on. Also, all in one units come out surprisingly price competitive.'

Marshall says that modern high quality amps are not electronically noisy but if they are fan cooled this could be in-appropriate for the control room.

'Most designated studio amps are convection cooled or have silent fans which is ideal. Mosfets vs Bipolar used to be a big issue but in the last five years the bipolar amps have gotten so good and have fixed their cooling problems it's now simply a matter of the correct amp for your speakers and budget. One common mistake is

under-powering an amp for fear of blowing up the speakers when in fact the reverse is more often the case. EG: Our NS10s are powered with Perreaux 6000Bs (rated at 350w/8ohm) and the NS10s are rated at around 80watts. The point is that if the amp has this much headroom you will never overdrive the amp which is what kills drivers. Conversely a clipping or overdriven 20 watt amp will easily destroy your NS10s and this is also the reason that it's not such a great idea to run your Hi-Fi amp on your studio monitors as the dynamic range and headroom demands for live music, live vocals etc far exceed those of recordings.

Marshall's favourite amplifier brands include: Perreaux 'older now but sound great, really warm almost like tubes and never stop,' Crown. 'incredible track record and reliability,' QSC 'a newcomer but very efficient and good sounding,' and Australian Monitor 'the new breed mosfet, big sounding but true amps.'

'Of course in a large facility there would be a "near field" amp, a "mains" amp and a few headphone amps depending on the amount of sends. Headphone amps are not as critical and are often the old studio amps as they have been upgraded.'

Norman James McCourt from **C'est Ca Recording** (VIC) contributes: 'This is one of the critical issues areas which differentiates home studios from pro's — "BIG AMPS", lots of them, masses of headroom and being able to change to combinations from time to time. Our favourites are Quad S20F and Groove Tube Dual 75 (valve). Our active monitors are Quedsted 205s and we also have Quad 33s and 303s which we use to drive NS10s and headphones. Our Quad amps (in some cases) have been running for 15 years, 12 hours a day and never faulted—and I might add, never caused a speaker to demise.'

*Thank you to all ProTalker-s!

I WAS
IN A

Band

...THE BAD OLD DAYS

• Feature by Madeleine Murray

"Radio Birdman was not 'just another rock 'n' roll band', but a living entity, which had an appearance as well as a sound, and which was born, lived and died as a sentient being here on earth." Dennis Tek, Radio Birdman songwriter and guitarist (from *Radio Birdman*, by Vivien Johnson)

Radio Birdman was a phenomenon, a cult, and an obsession. An incandescent combo of intelligence, abandon, and brute brilliance, which lasted four years during the late '70s.

Pip Hoyle was there.

For four years, he played klavier with Radio Birdman. They toured Europe, they blasted every dive in Sydney, they developed a following of religious intensity. Then they split up.

Pip Hoyle traded the primal moans of Gonzo rock for the crisp, stainless medical world, where drugs have a different meaning.

Today, Dr. Philip Hoyle is the Chief Executive of a large country hospital in Australia. He handles a budget of over \$40m, and runs a staff of 600. "It's a fairly full on managerial job, I guess," Hoyle said. "Health's a big business, a very complex business. It's enjoyable." Sadly for any woman who lusts after a keyboard player who can also talk clinical immunogenetics, he is happily married, and has two children.

"Radio Birdman lasted four years, but biologically, it felt a lot longer," Hoyle said. "I probably evolved considerably from being a long haired, disorganised person, to being a short haired disorganised person, to being a short haired organised person." "I wonder how many people know, when they check into the hospital, that this modest, soft spoken doctor used to be a legend in a different theatre.

Even though I like to imagine that Hoyle had a crazed, orgiastic life in the old days, he says that his main interests then were his medical

studies, and the music. "Radio Birdman was wonderful, but one accepted it for what it was. It was just fun. I was always more interested in the music than the culture, to be honest, and I remain that way."

Radio Birdman disgorgec its members when Deniz Tek went back to America to do his internship. "Deniz frankly was the main part," said F-cyle. "I mean, we all had brains, and we all had music, but Deniz had a unique combination of the two. And without him, it wasn't Radio Birdman, so there was no point in trying."

Last year, there was a Radio Birdman reunion, where old fans, and thousands of new ones turned up to see the force F-cyle was terrified of the band

getting together again. "If you're going to use any brains, you wouldn't have a reunion, but we didn't use our brains. We used our hearts, and it worked really really well. We got on fantastically, and focussed once again on the music, and played better than ever. I've played in a lot of bands since then, and haven't enjoyed myself half as much. Really great fun, really enjoyable, very fulfilling professionally, and socially great. I can't think of anything bad about it.

"Some gigs weren't as good as others. I'm much more philosophical than most of the chaps in the band. If the chemistry isn't there, it isn't there. No amount of getting upset will bring it to life. But I'm a philosophical type, I guess."

And he's back to the world of parareoplastic syndromes, metastatic invasions, and endoscopies. As for the other Birdman, Ron is a professional writer in the UK, Chris is studying to be a naturopath, Deniz is an emergency medical director in Montana, Rob is a public servant, and Warwick is a Disney animator.

RADIO BIRDMAN



L to R: Pip Hoyle, Warwick Gilbert, Deniz Tek, Ren Keeley, Chris Masuak, Rob Younger

(more on next page)

I WAS IN A *Band* ...THE BAD OLD DAYS

THE GO-BETWEENS

Lindy Morrison was the drummer for ten years in the very successful band, The Go-Betweens. She joined when she was 28. They were based in London, and toured six months of the year in Europe and America.

"The tours were pretty rough," Morrison said. "When we were living in London, we were extremely poor. We led a typical rock and roll lifestyle."

The band broke up, and Morrison came back to Australia. She had a baby at the age of 40. "I found that the rock lifestyle was not compatible with raising a child."

Morrison now spends most of her time doing community art with music. She holds songwriting and percussion workshops all over Australia, in places like Mt Isa, the Brisbane jails, Mt Gambier. She works with unemployed people in Sydney, and is the musical director of an intellectually disabled band. As well as all this, Morrison lectures on the music industry. "I know the business side of the industry backwards, and I like to tell artists how they can make money."



Lindy Morrison showing the ropes to a couple of youngsters

TWISTED CABLES AND EXPLODING AMPS

When he was 18, Emilio Mihatov played guitar in a pub band, called Euphoria, around Brisbane. Their PA system was a HMV hi-fi amplifier, 25w per channel. They ran it into a pair of Celestion 4560 bins, massive horn loaded bins which were 150w each, and a pair of RCF horns. "We had those speakers, and instead of having an active crossover, which is what you're supposed to have, we had a little capacitor, which stopped the low frequencies from getting into the horns," Mihatov said.

Their mixer was a little Tascam 244 4track, and the whole five piece band was running into that. "We were paying this pub gig about two hours north of Brisbane. We all got paid \$20 each, paid \$30 each for accommodation, and on the way back the motor in my Escort blew up. We were stranded halfway between Brisbane and Maleny."

Mihatov's guitar amp was a '65 Fender Princeton. It was a valve amp, but the volume pct didn't work, so it was on full blast all the time. To get some sort of volume control, Mihatov used a little hi-fi volume box from Tandy's. In order to plug it in, he had it hanging halfway between his amp, and the other box, so it was suspended in mid air. It was hanging over the top of the foldback amp, which was actually the guts of a Jade bass guitar amp, so it had no lid on it. All the circuitry was exposed.

The band was playing a rock medley in a crowded pub full of bean growers, and fruit pickers. "I got bumped by the bass player, an orthodontal technician, and my guitar neck went down on the cables, pulling the little preamp volume thing off its perch into the bass amp, which then exploded, and caught fire."

The sound engineer couldn't see what was happening, so they changed the words in their song to "Tutti, frutti, the foldback's rooted..."

Eventually Mihatov sorted out his cables, amps, foldbacks, and valves and became an accessories product support engineer for Fairlight.

THE WRONG ROAD MANAGER

Wayne Kellett was the bass player in The Honeymoon, travelled, toured and made no money.

"I still play in bands, but it's kind of hobby status now. We have a bit of fun, get together, have a couple of drinks.

"With musicians, it tends to happen even a bit later. I was 28 when my first child was born. I didn't settle down until then. I didn't even really start working seriously until I was 30."

Kellett remembers lots of driving, never having any money, trying to push the band, and numerous disappointments along the way. "That's one of the reasons I stopped doing it full time. It just seemed like it was going to go on and on forever, never being quite right."

Honeymoon recorded one album, which didn't do as well as expected. Kellett ended up road managing the band, which he admits is one of the reasons it fell apart.

Kellett is now professional lighting sales manager at Herkes in Sydney. He is married, with two children. His 14 year old son plays electric guitar.



L to R: David Ferguson, Neil Schafer, Kevin Bennett, Wayne Kellett

I WAS IN A *Band* ...THE BAD OLD DAYS

OPENED FOR QUEEN, AND ELTON JOHN



Bob Dylan of the 80's? Tony Waine

The Narcs started off as a three piece band, doing Police covers in New Zealand. Soon, the Narcs were touring with their own songs. They got gold records, top ten hits, and seven industry awards in NZ, including Best Song of the Year. CBS (Sony) signed the band, who supported Queen, Elton John, McEnight Oil, and Split Enz.

Tony Waine, bass player, was on a roll. He won the APRA Songwriter of the Year in '86.

"Why am I here?" Waine wonders, from his Central Coast office, where he is marketing manager for Australian Audio Supplies. Then he answered the question himself. "Really what happened, is that we had a good eight years, from '80 to '88. Then near the end of it, we kind of ran out of fire. We developed other interests. We ran out of ideas, and our manager ran off with the money..."

They decided to take a holiday, and came over to Australia. Waine started playing bass guitar in a duo around Sydney. "That lasted for two years," Waine said. "I got utterly sick of it, playing crap to drunks, I just hated it in the end."

Dave Croxton, from Australian Audio Supplies offered him a job. "I'd bought my PA from him. He knew that I was getting out, and he asked me if I wanted to hook a bit of gear off. I teamed up with him, and started doing his catalogues. I bought a computer and a scanner. I'm still here in '97. Basically, I sit in front of a computer, and make the marketing strategies. I articulate them, and make them happen. I do everything from press releases, logos, brochures, whatever needs to be done."

Croxton worked tours like Dire Straits, so both men have an intimate knowledge of the music scene. "There's lot of bullshit in the industry, and I think it's really helped to see right through it. You have to take the hype in the entertainment industry with a grain of salt."

Waine has a business degree, is currently doing a post grad degree in Multi media, and is married. "verging on family." He has just released an album in NZ. •

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Aria for Fisher

Charles Fisher has won both ARIA's Australian Producer and Engineer of the Year awards for 1997. The Producer of the Year Award acknowledges his work on such projects as *Savage Garden-Savage Garden*, *Hoodoo Gurus-Down On Me, I Am Australian*-Judith Durham, Russell Hitchcock, Mandawuy Yunipingu and *Far Shore-The Seekers*. The Engineer of the Year Award also recognised Charles Fisher's work on the *Savage Garden* project.

Staff @ Flagstaff

Ceri Davies has joined Flagstaff Studios in Melbourne in the position of Studio Manager. Ceri comes to Flagstaff, a division of AAV Digital Pictures Melbourne, following three years at Metropolis Audio. She has also worked at Skywalker Sound in the US. Also recently appointed to Flagstaff Studios in Melbourne is **Geoff Searle**, most recently from 5MMM Adelaide. T 03 9251 1768.

Dex revamp

Melbourne's **Dex Mastering** has revamped one of its several Ampex 2-track machines for CD mastering - an original Ampex AG 440 in Suite 2. Dex Mastering say this "beast" features original Class A amplifiers, and at 15ips, it now has a response from 18Hz to 30kHz! 'It's the perfect tool for adding real analogue tape character to digital programs - a great tonal 'beef-up' prior to going in to our Sonic Solutions system' said **Adam Dempsey**, Mastering Engineer at Dex. Some recent clients have included Luxum, Mirth, John Clarke and Craig Pilkington of the Killjoys. T 03 9372 2266.

Skylab overhaul

Skylab Studio in Surry Hills, NSW have added some new equipment including more compressors: 1 x DBX 266A Stereo, 1 x Drawmer 221 Stereo and 1 x T.C. Electronics Finaliser/Stereo Mastering Tool. This brings the total number of compressors to 14. They have also purchased an Ampex 24-track analogue 2" to compliment their 32-track digital system. Skylab's Dave Russell said this means bands can do digital back-ups of analogue recordings. As well, **Greg Cammeron** from Studio 310 has overhauled Skylab's main control room monitoring—JBL 4425s and Tannoy NEMs. T/F 02 9310 4774.

Troy Horse add it

Troy Horse has recently installed a Lexicon 224XL and an A.K.G Spring Reverb in their Alexandria operation and they say their 2nd 24-track studio will open soon. T 02 9319 1799.



Trackdown add 4th ProTools suite

Trackdown Digital in Camperdown, Sydney have set up a fourth ProTools suite in response to the increasing demands of the multimedia market.

They now have in place a 16-track ProTools 4.01 system with an 888 interface and 4xDSP farms running on a Power Macintosh 7300/200 platform. The new facility has in addition a dedicated 4Gb sound effects library on hard drive plus additional Sound Ideas 5/6000 plus extra SFX CDs. They use Mezzo software to back it all up. Trackdown Digital has been

steadily attracting a number of film, TV and multimedia and internet clients to the facility and the studio operators consider this a growing area.

Trackdown have been responsible for the audio content of Yoram Gross animated films (since 1937), Juniper films are recent clients and Trackdown has also recorded two albums for Bananas In Pyjamas for ABC records.

Trackdown's vision orientated work is concurrent with their ongoing band and music projects. **Call +61 2 9550 6890.**

DG try it & buy it

Whilst recording the next round of *Grow Your Own* indie bands **Damien Gerard Sound Studios** are using the opportunity to evaluate some new gear such as Bellari Tube Mic Preamps, ATI, ART Mic Preamps and TL Audio Tube Equalisers. The studio's new Ensoniq Sampler and Sony MCI JH24 2" Machine are also well employed at the moment.

Recent activities at Damien Gerard Sound Studios has involved a growing amount of transfer work via their large range of format technology. To date formats available include: 16-track 1", 16-track 1/2", 24-Track 2", 2-Track 1/4", ADAT DA-88, Session 8 Hard Disk, 2-Track DAT.

They also mention a recent recording project for the band Stumble who wanted an authentic sixties sound.

'Four stereo pairs of original Reslo Ribbon mics and a 1959 RCA tube microphone pre. were hired-in for tracking.' Said studio owner Marshall Cullen, who also co-produced and co-engineered the project, 'The results were astounding; getting the source sound right makes all the difference.'

New gear at DG's includes a ATI Paragon Super Six Mic Pre/EQ/Compressor and Gate

(a high-end Focusrite-style quality unit). An ATI MP1 Mic Pre has also been added which is apparently great for vocals, bass and guitar. T 02 9660 8776.

Classic @ Charing X

Charing Cross Studio emphasise their classic credentials with the acquisition of 1071 Neve desk. They have also installed a group muting system on the Neve to 'save time at mixdown' and they say it has so far been 'much appreciated'. Charing Cross say they will follow this with automation later this year. They have also recently refurbished a tube 'gates' compressor which they use over vocal tracks. T 02 9387 8362.

Studio 52 & Adat

Studio 52 have upgraded their service and facilities including 3 new ADAT XT recorders, a BRC remote in Studio B and a Yamaha 02R digital mixer. This will be available for hire in either studio or for location recordings with up to 32 tracks of ADAT supplied. Studio A is also being upgraded with the addition of an Apple 7500 computer and Pro Tools.

• Contact Paul Higgins. T 03 9417 7707.



BASF National Tracking Guide

ARTIST	PRODUCER	ENGINEER	PROJECT	ARTIST	PRODUCER	ENGINEER	PROJECT
New South Wales							
A# Sharp Recording Studio	Jeff Cripps (02) 9153 9988. 24 Track 1"			Paul Bryant Mastering	Paul Bryant (02) 9748 0222. Mastering Suite		
Big Time Operators	Jeff Cripps	Jeff Cripps	Demo	Gael Force	Tony Ansell	Paul Bryant	CD Album
Hank Coupman	Terry Hearne	Jeff Cripps	CD	Brent Parlance	Nash	Paul Bryant	CD Single
Donna Marie	Terry Hearne	Jeff Cripps	CD	Etched In Stone	Ian Pritchett	Paul Bryant	CD Master
3rd Degree	Jeff Cripps	Jeff Cripps	CD Pre-Production	Topnovil	Rob Specogna	Paul Bryant	CD Master
Aphek Studio	Greg Dixon (02) 9876 8170. 16 Tracks to 1" analogue			Peter Hicks	Peter Hicks	Paul Bryant	CD Album
Jahn	Artist	Greg Dixon	Album	Steve Howard	Martin Cilia	Paul Bryant	CD Album
Cyan Brass	Band	Ed/Greg Dixon	Album Mixes	Rockinghorse Recording Studios	Grant Hilton (066) 884 131. 48 Tk. Analogue, 32 Tk. Digital		
J	Band	Greg Dixon	EP	Firesign	Paul Gallagher/Greg Clarke	Greg Clarke	EP Remix
Julia Praside	Mary Anne Coyle	Greg Dixon	Demo	Renegade Funktrain	Band	Ramesh	3 Songs
Thredom	Spike Mason	Greg Dixon	Album	Tightrope	Band	Zubin Henner	Album
Bush Traks	Ruth Miller (066) 891 290. 24 Tk. Recording & Multimedia Studio			Yothu Yindi		Hans Gemperle	2 Songs
Bo Kaan	Bo Kaan	Dave Highet	Album	Leo Aston	Leo Aston	Zubin Henner	Demo
Charing Cross Studio	David Sykes (02) 9387 8362. Quality Neve/Studer 24 Track Analogue			Betty Everett		Zubin Henner	CD Remaster
Sidewinder	Paul Mc Kercher	Paul Mc Kercher	Album - Tracking	Skylab	Dave Russell (02) 9310 4774. 32 Tk. Digital & 24 Tk. Analog		
Gary Barlow	Gardner/Jackman/Allom/Jones	G.J./A.J.	Album - Tracking	The Nevils	Mark Marriott	David Russell	Album
Tax	Lachlan Mitchell	Lachlan Mitchell	Album - Tracking	Sirocco	Bill O'Toole	David Russell	Album
Nic Dalton	Peter Jones	Nic Dalton/Peter Jones	Album - Mixing	T. J. Eckleberg	Andrew Nicholas	David Russell	Album
Lucid	Paul Mc Kercher	Paul Mc Kercher	Album - Tracking	Cathy Mac	David/Cathy Mac	David Russell	EP
Tyg	Tim Powells	Tim Powells	Album - Mixing	Unholy	David Higgins	Michael Ford	Album
Damien Gerard Studios	Marshall (02) 9660-8776. 2" 24 Trk., 1/2" 16 Trk.			Dave Gleeson	Mark Marriott	Dave Russell	Album Track
Tin Gods	Marshall Cullen	Anthony Caub	EP	Sony Music Studios	Ross A'Hern (02) 9383 6320. 24 Track Studio		
Cindy Ryan	Genevieve Maynard	Marshall Cullen	Single	Bob Bertles Quintet		Ross A'Hern	Album (Rec. & Mix)
Raouls	Chris Masuak	Marshall Cullen	EP	Stop That Lemming		Adrian Bolland	Album (Mix)
Crank	Band	Russell Pilling	EP	Charlie Chan	Charlie Chan	Louise Taylor	Album (Rec.)
Simpletons	Band	Jordan Bach	Mixdown B-Sides	John Moody	Jim Bonnafond	Jim Bonnafond	Demos (Rec. & Mix)
Montana	Paul Scott	Russell Pilling	EP	Jim Kelly's Guitarkestra	Jim Kelly	Ross A'Hern	Album Mix
David Lawrence Music Productions	David Lawrence (02) 6559 8766. 24 Ch./8 Tk. Digital			The Necks		Ross A'Hern	Soundtrack (Rec. & Mix)
Turner & Moore	Colin Turner	David Lawrence	CD Album	Soundwarp	Meredith Brooks (02) 9905 7144. Mastering		
David Lawrence	David Lawrence	David Lawrence	CD Album	Noel Evans	Noel Evans	Meredith Brooks	Album
Settlement City Shopping Centre	David Lawrence	David Lawrence	Advertising Jingle	Scruffs	Laura Bailey	Meredith Brooks	Album
Radio Instant Classifieds	David Lawrence	David Lawrence	Advertising Jingle	Brethren	Phil Eades	Meredith Brooks	Mini Album
Stump	David Lawrence	David Lawrence	Demo	Shifter	David Kattley	Meredith Brooks	Mini Album
The Kelly Gang	David Lawrence	David Lawrence	Demo	Laxman	Ludwig Darre	Meredith Brooks	Album
Feral Studios	Jon Robertson (02) 6299 3224. 16 & 32 Track Analogue			David Fielder-Gill	Artist	Meredith Brooks	Album
Exhibit A	Jon Robertson	Jon Robertson	Album Tracking	Top Cat Recording Studio	Brad Wann (02) 6628 0843. 24 Track Analogue 1", CD Mastering & Burning		
Kandi Doz It	Jon Robertson	Jon Robertson	Album Tracking	Fog	Ross Ward	Brad Wann	Album/CD
Brave & Crazy	Jon Robertson/Band	Jon Robertson	Demos	Ale Cope	Artist	Brad Wann	EP/CD
The Roys	Jon Robertson	Jon Robertson	Demos	Plastic Smash	Band	Brad Wann	EP/CD
Sieva	Tony Barrington	Tony Barrington	Mastering	Amy Shelton	Brad Wann	Brad Wann	Album/Demo
The Rug	Jon Robertson	Jon Robertson	Demos	Trackdown Digital	Marcus Leadley (02) 9550 6890. 3 x 16 Tk. Pro Tools, 32 Tk. Main Studio		
Festival Mastering	Catherine Knapman (02) 9395 8070. Sonic Solutions			Guy Cross	Guy Cross	Katrina Schiller	Soundtrack
Various		William Bowden	APRA Composr Exposure	Harrowcasters	Anita Olsen	Katrina Schiller	Art Gallery Tours Rec.
D.I.G.	Richard Austin	William Bowden	Single	Peter Bull		T. Lista/J. Clifford	Album Recording
Living End		William Bowden	EP	Crimus		T. Lista/J. Clifford	Demo
Atticus		William Bowden	Album	Skippy	Yoram Gross	Tim Ryan	Foley/Dialogue/FX Record
Introverse		William Bowden	EP	Applied Multimedia	Lisa Vincent	Leon Horrocks	Voice Over/Sound Effects
Wonderkind	Band	William Bowden	EP	Troy Horse	Micky Lewis (02) 9319 1799. 2" 24 Tk. Tactile Technologies Desk		
Festival Studio	Catherine Knapman (02) 9395 8070. 2 Analogue or Mitsubishi Digital Machines			Directions In Groove	Richard Austin	Richard Austin	Album Mixing
Colin Buchanan	Garth Porter	Ted Howard	Overdubs - LP	Bondi Youth Wave	Tina Harris	Dan Griffin	Youth Program
Choir	Peter Casey	Glen Phimister	Or Wings Of Love	Caiseal Mor	Peter Kennard	Colin Wright	Album
Bernard	Bernard	Matt Lovell	Demos	Blue World	Ajala	Tom Kasas	EP
Hullabaloo	Geoff (02) 9906 2933. 2 x Pro Tools Suites & 24 Track			Peg	John Rafferty	Dan Griffin	Mixing EP
Pro-Television	Bill Davidson	Glenn Heaton	TV Series Sound Post	Tony Lewis	Tony Lewis	Mickey Lewis	Video Soundtrack
Total Perception	John Izzard	Glenn Heaton	Documentary Sound Post	Turtlerock Mastering	Rick O'Neil (02) 9358 4955. Sonic Solutions, Apogee, UV-22, Super CD Encoder		
Excalibur	Bob Ritchie	Glenn Heaton	Corporate Sound Post	Glide	Wayne Connelly	Rick O'Neil	Album
Alan Dean	Alan Dean	Glenn Heaton	Commercial Music Record	Circle Of Faith	Peter Blyton	Rick O'Neil	EP
Flicks Aust.	Bill Mulham	Glenn Heaton	Corporate Sound Post	Phil Norton	Artist	Rick O'Neil	Album
JMF Sound Studio	Fran Esther (02) 9790 4097. 32 Tk. 1" X850, 24 Tk. ADAT, 24 Tk. 1" Analogue			Load	Band	Rick O'Neil	Album
Cryogenic	Tony Jarrett	Mike Ward	CD Album	Whopping Big Naughty	Band	Rick O'Neil	Vinyl Master
Whygao	Band	Ralph Esther	Demo	Lindsay Hammond	Glen Goldsmith	Rick O'Neil	Album
Kojo Ashkan	Artist	Guy Saminaden	CD Album	Turtlerock Productions	Rick O'Neil (02) 9358 4955. 2" 24 Tk. 32 Ch. Neve Console		
Jeff Stevenson Band	Jeff Stevenson	Ralph Esther	Demo	Addiction	Drew Skinner	Rick O'Neil	Single Mix
Jo Rao	Artist	Guy Saminaden	CD Album	Discrete	Rick O'Neil	Rick O'Neil	Album
Lucinda Street Recordings	Rick Mostyn (042) 252 272.			A.J. Tigers	Rick O'Neil	Rick O'Neil	Album
Evol	Rick Mostyn	Rick Mostyn	Live CD (Record & Master)	Velvet Sound Recording Studios	Dave McCunn (02) 9264 3420. 32 Ch. 24 Tk. 2"		
Cherry Swamp	Rick Mostyn	Rick Mostyn	Live CD (Record & Master)	Cactus Child	Craig Portells	Craig Portells/Tony Wall	Album Tracking
Anemoie	Rick Mostyn	Rick Mostyn	Demos	Queensland			
Megaphon	Guy Dickerson (02) 9550 6576. 24 Track Analogue & Digital			Digital Paradise	Ian Peters (07) 5527 0722. 32 Track Digital		
Babe 2	Lew Kiek	Guy Dickerson	Film	Various	Evan Webster	Ian Peters	A/V Production
Chris Abrahams	Self	Guy Dickerson	So o Piano CD	Sunjoy	Band/Barry Pearson	Ian Peters/Barry Pearson	Album Tracks
Roy Bookbinder/Backsliders	Band	Guy Dickerson	CD	Plastic Marionette Theatre	George Vacek	Ian Peters	Music/Voice Production
Porkers	Band	Lachlan Mitchell	CD	Various	Sue McGrath	Ian Peters	Children's Story Cassette
Nu-town	Greg Hopping (02) 9516 3306. 32 Trk. Digital, 16 Trk. Analogue			Barbara Thompson	Mark Day	Ian Peters	Album Tracks
Lisa Wass	Greg Hopping	Greg Hopping	Album	Luke	Barry Pearson	Barry Pearson	Album Tracks
Ultra Love Machine	Greg Hopping	Greg Hopping	Single	Greenville Studios	Malcolm Jacobson (07) 3262 8422. 24 Tk. Analog, 16 Tk. Digital, CD Mastering		
Daydream	Band	Mark Worrall	Single	Spacejunk	Band	Malcolm Jacobson	CD Mastering
Jade	Mark Worrall	Mark Worrall	EP	The Gordons	The Gordons	Malcolm Jacobson	CD Mastering
Shield	Nevin-Hopping	Greg Hopping	Remix	Al Smith	Paul Cheeseman	Paul Cheeseman	Album
T.T.G.	Greg Hopping	Greg Hopping	Remix	Vicky O'Keefe	Vicky O'Keefe	Malcolm Jacobson	Album
Oak Tree Studio	Colin Bale (02) 6772 6221. 16 Track			Future Native	Band	Malcolm Jacobson	Album
Bundy Bush Band	Colin Bale	Colin Bale	Album	Gregg Arthur Quintet	Gregg Arthur	Malcolm Jacobson	EP
Matthew Knights	Colin Bale/Matthew Knights	Colin Bale	Album	Prodigious Audio	Richard or Mark (07) 5571 1400. Soundcraft Automated, HD & Digital Tape		
Beardy Bros	Colin Bale/Keith Cornish	Colin Bale	Album	Jonathan	Mark Munro	Mark Munro	Album Tracks
Paradise Studios	Jason Lea (02) 9357 1599. Custom Mixer.	Studer A800, MCI JH114 2" Analogue		Sioban	Mark Munro	Mark Munro	Single Remix
Pale Riders	Band/Randall Waller	Randall Waller	EP - Mixing	C.A.A.	T.W.M.	Mark Munro	Training Video
Bettina Litchfield	George Brodbeck	Glen Phimister	Album - Mixing	Various	Prankstar	Mark Munro	Compilation Album
The Companion	Band	Steve Wilson	Album - Tracking				
Janet Seidel	David Seidel	Jason Lea	Album - Mixing				
Dejamba	Band/Henshaw	Michael Henshaw	Album - Mixing				
Becky Cole	Rod McCormack	Jeff McCormack	Album - Tracking				



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ARTIST	PRODUCER	ENGINEER	PROJECT	ARTIST	PRODUCER	ENGINEER	PROJECT		
Suite 16 Audio Productions Murray Lyons (07) 3369 8733. 24 Tk. Analogue & Digital				Ranger Stacey				Chris Corr	Album
Aim 4 More	Garry Smith	David Champion	Album	Zimbalists		Ben Hurt	EP		
Sali		David Champion	Demos	The Testifiers		Ben Hurt	Tracks for Album		
Ross Lovell	Ross Lovell	Julian Lynch	Album	Xenos		Chris Corr	Album		
Sunshine Leon (07) 3844 6844. 36 Channel Neve				Pan Studios Sally Laver (03) 5222 5099. 16 Tk. Analog, 24 Ch. W/M101					
Jerico	Mark McElligott	Mark McElligott	2 Tracks	Lochard	Ade Kelly	Sally Laver	2 CDs		
Bulb	Leon Prescott	Leon Prescott	EP	Dave Steel	Dave Steel	Sally Laver	CD		
Blow Hard	Leon Prescott	Leon Prescott	EP	Magic Dirt	Magic Dirt	Michael Arthur	CD/EP		
Not From There	McGoo Music	McGoo Music	EP	Sweethearts Of Swing	Ross Lipson	Sally Laver	CD		
Sister Sister	Leon Prescott	Leon Prescott	Demos	Grizzly Brothers		Sally Laver	CD		
Taramalin Sound Allan Lahey (07) 3208 9736. 16 Track Analogue/CD Printer/Dynaudio Monitors				Irish Murpheys	Ade Kelly	Sally Laver	CD		
Fiona Honeyman	Artist	Allan Lahey	EP	Sing Sing Kaj/Phil (03) 9428 4622. 48 Analog, 48 Digital SSL/Neve					
Gordon McDowell	Mark Finigan	Allan Lahey	Album	Midnight Oil	McGoo/Band	McGoo	Album		
Mark Tempany	Dash McIvor	Dash McIvor/Allan Lahey	Album Track	UB40	CJ Boland	CJ Boland	Remixes		
Zebulon	Band	Allan Lahey	Live To DAT EP	Mavis's	Kalju Tonuma	Kalju Tonuma	Album		
Julian Jones/Birch	Dash McIvor	Allan Lahey	Album Track	Swoop	Ashley Cadell	David	Album Mix		
Bad Media Fame	Band	Allan Lahey	EP	Paul Kelly	Paul/Maddy	Laurence Maddy	Mix		
Vandersound Studios Eric Vandersande (07) 5546 8100. All Digital & Valve, HDR, ADAT/XT, O2R, CDR				Jebediah	Neil King	Neil King	Album		
Ian Francis	Eric Vandersande/Artist	Eric Vandersande	Album Tracking	Sound Around Studio Trevor Cronin (03) 9531 3891. Mobile Studio					
One's Power	Eric Vandersande	Eric Vandersande	EP	The Earthmen	Nick Batterham	Trevor Cronin	Rec. Live Album Tracks		
Crush	Eric Vandersande	Eric Vandersande	EP	Moler	Band	Trevor Cronin	Rec. Live Tracks		
Ian Robinson	Eric Vandersande	Eric Vandersande	Edit & Remix	The Earthmen	Nick Batterham	Trevor Cronin	Mix Live Album Tracks		
Warren Winter	Eric Vandersande	Eric Vandersande	Album Tracking	Spring Studio Harry Williamson (03) 9529 7779. Fully Equipped 24 Tk. Digital Editing & Recording					
Matt Soome & Friends	Eric Vandersande/Matt Soome	Eric Vandersande	JJJ Radio Special	Lothlarian	Harry Williamson	Harry Williamson	Album		
South Australia				Louisa John-Krol	Harry Williamson	Harry Williamson	Album		
ATD Master Suite Al Sankauskas (08) 8212 7111. CD Mastering Facility				Chaski	Harry Williamson	Harry Williamson	Album		
Metro Male Choir	Don Gil/Al Sankauskas	Al Sankauskas	CD Release	Far From The Madding Crowd	Harry Williamson	Harry Williamson	Album		
E. Type Jazz	Dan/Al Sankauskas	Al Sankauskas	CD Release	Roy Harper	Harry Williamson	Harry Williamson	Edits		
Bollard	Nick/Paul/Al Sankauskas	Al Sankauskas	CD Release	Studio 52 Paul Higgins (03) 9417 7707. Studio A - Automated 48 Tk. Studio B Adat 24 Tk					
Sound Doctrine	Al Sankauskas	Al Sankauskas	CD Release	Cammomile	Trevor Carter	Trevor Carter	New Acoustic Album		
Revolver	George/Al Sankauskas	Al Sankauskas	CD Release	Botzwh	Trevor Carter	Trevor Carter	Album		
Wether Permitting	Ian/Peter/Al Sankauskas	Al Sankauskas	CD Release	Swinburne College	Rod Ingham	Trevor Carter/Jarl	Comp. Album		
Agro Fish Studios Julie Raynes (08) 8223 7211. 24 Track				Blynd	Blynd	Trevor Carter	EP		
Safety Electrical Services	Mike Steele	Andrew Bayfield		Ashwood College	Ashwood Staff	Jarl	Big Band Demo		
Creative Forrest Prod'ns	Mike Forrest	Andrew Bayfield	Jingles	Smiling Politely	Band	Jarl	Demos		
Sandalwood	Tim Power	Roy Erzinger	Demo	True Form Music Services Neil Gray (03) 9391 0907. 24 Tk. Digital, 12 Tk. Analogue					
Humphrey B. Bear	Wilson Main	Andrew Bayfield		Narnia	Band/Neil Gray	Neil Gray	EP		
Hitmen Audio Prod'ns	Tim Jones	Andrew Bayfield	Jingle	David Boardar	Artist	Neil Gray	Demo		
CFE	Tim Power	Roy Erzinger	CD Production	Royal Melbourne Show	Christine	James Kilpatrick	Voice Overs		
"the fridge" Nigel Sweeting (08) 8231 3588. 32 Tk. Digital/Analogue - Automated Mix				Deadpan	Band/Neil Gray	Neil Gray	Mix Album		
Akhter	Band/Nigel Sweeting	Nigel Sweeting	CD Remix	Tim Rosewarne	Tim/Band	Neil Gray	Demos		
Dave Robinson	Dave Robinson	Nigel Sweeting	CD	Richard Lovegrove	Band	Neil Gray	Demos		
Ratatouille	Band	Nigel Sweeting	CD	Wombat Road Studio Barrie Clissold (03) 5145 4204. 32 Tk. Digital, 16 Tk. Analogue					
Tim Gibuna	Band	Nigel Sweeting	CD	The Fakowies	S. Schultz	Barrie Clissold	Live Demo		
Andy Bayliss	Andy Bayliss	Nigel Sweeting	Demo	Shivers	Band/Barrie Clissold	Barrie Clissold	Demo Tape		
Victoria				Jill Meehan	Jill Meehan	Barrie Clissold	Album Tracking		
Big Beat/Equinox John "Shadow" Toth (03) 9898 5815. 16 Tk. Analog, 8 Digital, Midi/Mastering				Jim Ayres	Jim Ayres/Barrie Clissold	Barrie Clissold	Album Tracking		
Aqua-Nine	Band	Williams	CD Master	The Steaming Monzas	Band/Barrie Clissold	Barrie Clissold	Live Demo		
Curse Or Dialect	Toth/Band	Williams	CD Master	Buzz	Band/Barrie Clissold	Barrie Clissold	Demo CD		
Project A	Band	Williams/Borgeest	Demo	Western Australia					
Serenade	Band	Williams/Borgeest	Demo	Bonsai Recording Studio Tom Thorpe (09) 9246 4408. 24 Track					
Stainless Steve	Steve/Toth/Williams	Williams	Demo	Terry Perganalis	Tom Thorpe	Tom Thorpe	Album Remix		
Slavemaster/Macbeth		Williams/Borgeest	CDs	Kay-Redman	Tom Thorpe	Tom Thorpe	Jingles		
C'est Ca Recording Norman James (03) 9419 1506. Automated 24 Track Digital and Analogue				Jesus Sandals	Tom Thorpe	Tom Thorpe	Mixdown EP		
Ted Bardeol	Norman James	Norman James	Album Remix	Leon-Redgate	Tom Thorpe	Tom Thorpe	Demos		
Bernard Bolan	Bernard Bolan	Norman James	Album	Planet Studio John Villani (08) 9382 2211. 48 - 32 Digital - 24 Analog					
Footscray/Yarraville City Band	Norman James	Norman James	Anthology Album	Motherstar	John Villani/Band	John Villani	EP		
Shenanigans	Gary King	Norman James	Comp. CD #3	Yesa-Music	John Villani	John Villani	Album Mix		
Shenanigans	Gary King	Norman James	Album Remaster for CD	Pino Demarco	Nunzio Mondio/John Villani	John Villani	Album Mix		
Crystal Mastering Joe Carra (03) 9326 2318. Sonic Solutions/Apogee UV22				Oz Connection	John Villani/Band	John Villani	Album Tracking		
Cordrazine	Nigel Derricks/Band	John Ruberto	Single	Hank Marvin	Hank Marvin	Les Williams	Album		
Muddy Puddles	Band	John Ruberto	CD Mastering	Horizon	John Villani	John Villani	Single		
Cromagnon	Band	Joseph Carra	CD Mastering	Poons Head Rob, Sam, Bush (08) 9339 4791. 32-48 Track					
Rude Mood	Chris Wilson/Band	John Ruberto	CD Mastering	Thrive	Rob Grant	Rob Grant	Album		
Jan Preston	Jan Preston	John Ruberto	CD Mastering	Perry Dowd	Rob Grant	Rob Grant	Album		
Psycho Circus	Band	John Ruberto	CD Mastering	Graham Dickenson	Rob Grant	Rob Grant	Album		
Dex Mastering Adam Dempsey (03) 9372 2266. 2 Suites, Sony Custom Converters				Heads Were Dancing	Alan Dawson	Rob Grant	Mastering		
John Clarke		Adam Dempsey	Fred Dagg - Remasters	Iron Youth	Rob Grant	Rob Grant	Album		
Chicken Shack	Band	Adam Dempsey	EP	Chandra	Rob Grant	Rob Grant	Song		
Luxum	Victor Van Vugt	Ben Hurt	EP	Northern Territory					
Camel Magic	Fin Rada	Adam Dempsey	Mastering from Cassette	Caama Music Steven Tranter (08) 8952 9205.					
Peter Bell	Peter Bell	Adam Dempsey	Remastering LP	Black Storm	Steven Tranter/Stan Satour	Steven Tranter/Stan Satour	Album		
Craig Pilkington	Craig Pilkington	Ben Hurt	Editing	Young Teenage	Alan Murphy/Tranter/Satour	Alan Murphy/Steven Tranter	Album		
Edensound Productions Martin (03) 9682 9066. Mastering				Warren Williams	Artist/Stan Satour	Stan Satour	Album		
James Reyne	James Reyne/Mick Letho	Martin Pullan	Single Master	Frank Yamma	Artist/Stan Satour	Album			
Brill	Brian Canham	Martin Pullan	Album Master	Terrasphere	Stan Satour/Mark Thomson	Stan Satour	Album		
Astrid Munday/Dystopia	Tony Cohen	Martin Pullan	Album Master	Herman Marcic	Artist	Stan Satour	Album		
Joe Dolce	Joe Dolce	Martin Pullan	Album Master	YOUR BASF TRADE SALES OUTLETS:					
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Snout	Greg Wales/Snout	Robbie Adams	Single Master	Independent Tape Services (02) 9436-0666					
Fortissimo Andy or Sarah (03) 9699 5811. 24 Tk. 2" Studer, 40 ch. Harrison				VIC: CATS (03) 9529-3177, Chapple Tape (03) 9580-6620, DEX Audio					
Jo Jo Leslie	Cletis Carr	Andy Parsons	EP	(03) 9372-2266, MTA & Assoc. (03) 9819-6455					
Large No 12's		Andy Parsons	Demos	SA: Adelaide Tape Duplicators (08) 8212-7111, Pro Media (08) 8276-6793					
Copping Music	Chris Copping	Adam Quaife	Advertising	WA: Ausmag (09)314-1953, Pro Copy (09)375-3902					
Industry	Steve Keppa	Andy Parsons	Advertising	QLD: Musiclab (07) 3862-1633, Tek (07) 3239-4000					
Martin Breeze	Martin Breeze	Sarah Liversidge	Demos						
Kiss Music Recording Studios Paul Kosky (03) 9827 1500. SSL Console, 48 Trk. Digital, 48 Trk. Analogue									
Bellucose	Kal Tonuma	Kal Tonuma	Album						
Killing Heidi	Paul Kosky	Paul Kosky	EP						
As I Am	Andy Baldwin	Andy Baldwin	EP						
Romeos Mistress	Chess	Andy Baldwin	Album						
Newmarket Studios Ben Hurt (03) 9329 2877. 24 Tk. 2" Analogue									
CoCo's Lunch		Chris Corr	Tracks for Album						
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IS-80-2 dual channel 80w @ 4W, 100v, 70v, 50v. Rear mount volume controls. Unbalanced, balanced optional. Large external heat sinks. Dimensions - 482W x 90H x 365D. Weight 10Kg. Also in 160w x 2 power. \$845.

IS-380-2 2 zone x 3 channel 80w @ 4W, 100v, 70v, 50v. Master presets vol, treble, bass, balanced in. Mic/aux selectable each channel. Optional twin vox muting. Dimensions - 482W x 90H x 365D. Weight 10Kg. Also in 160w x 2 power. \$1050.

IS 6160 6 channel 160w mixer amp 4W, 100v, 70v, 50v. Mic/aux switching each channel. Balanced in. Optional twin vox PCB. Dimensions - 482W x 90H x 365D. Weight 10Kg. Also in 80w and 250w. \$905.

APOGEE SOUND

ESA Audio (03) 9562 4605

MA-8 modular multi-channel amplifier with 8 x 200w modules. Includes cue switch, emergency page monitor and control functions, 8 ohm or 100 volt, battery backup spare channel substitution. Class D switching topology. \$8105.

CA-400 dual channel, bi-polar amp with split rail topology. 480w into 4 ohm. Rear volume controls. Upgradeable for Apogee Ampnet computer monitoring and control. \$3262.

CA-600 dual channel, bi-polar amp with split rail topology. 600w into 4 ohm. Rear volume controls. Upgradeable for Apogee Ampnet computer monitoring and control. \$3883.

CA-700 dual channel, bi-polar amp with split rail topology. 775w into 4 ohm. Rear volume controls. Upgradeable for Apogee Ampnet computer monitoring and control. \$****.

ARX

Arx (03) 9555 7859

SX300C 2 RU, 2 channels, toroidal transformer balanced outputs and power supply, balanced XLR and jack inputs, binding post or Speakon outputs. Output power 100w RMS, primary transformer winding: 8 ohms. \$1473.

SX500C 2 RU, 2 channels, toroidal transformer balanced

outputs and power supply, balanced XLR and jack inputs, binding post or Speakon outputs. Output power 200w RMS, primary transformer winding: 8 ohms. \$1834.

SX800C 2 RU, 2 channels, toroidal transformer balanced outputs and power supply, balanced XLR and jack inputs, binding post or Speakon outputs. Output power 300w RMS, primary transformer winding: 8 ohms. \$2257.

ASHLY AUDIO

Production Audio Services (03) 9415 1585

P70-400 dual channel Mosfet 70v line power amps. Based on Ashly MFA and FTX series. Power, 200w into 70v. Excellent protection, output metering. \$2695.

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AUDIO TELEX

Audio Telex Communications P/L (02) 9647 1411

IC30 30 watt mixer amplifier with 3 dual balanced mic/line inputs. 100/70 volts, 4 ohms and tape outputs. Vox operated muting on channel 1 via optional module. Auto limiting. Overall bass & treble controls. 240/120VAC 12VDC. \$272

AT120 120 watt mixer amplifier with 4 dual balanced mic/line inputs. 100/70 volts, 8 & 4 ohms and tape outputs. Built in 6 zone speaker selector with all call. Phantom power on mic 1. Auto limiting. Overall bass, treble and master controls. 240/120VAC. 60 watt version also available. \$648.

SA120 120 watt mixer amplifier with 6 dual balanced mic/line inputs. 100/70 volts, 8 & 4 ohms, 10k transformer balanced and tape outputs. Auto limit protection. Insert point for FBX or graphic EQ or similar. Overall bass, treble and master. 240 VAC/24 VDC. 2RU. 60 watt version also available. \$917.

DCM series 120, 250 and 500 watt power amplifiers. 100 volt and low impedance outputs. All are cooled via 2 thermally controlled fans for excellent reliability. 240 VAC/24 VDC. 10K balanced input/output. All models incorporate auto limit protection. DCM500 also has soft start. 2RU. From \$665.

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CS1200 commercial/install version of our 1K2. Fan cooled, balanced inputs, fully protected, fault and status indication. Bridgeable for 1200w @ 100 volt line output, 2RU, 19Kgs. 5 year warranty. \$2484.

CS800 commercial/install version of our K88. Fan cooled, fully protected including input mute, short circuit, thermal, mains in rush suppression and indication. Bridgeable for 70 to 100 volt line output, 2RU, 17Kgs. 5 year warranty. \$2056.

CS600 commercial/install version of our OPAL 2802. Convection cooled/fan on demand cooling. Fully protected, fault and status indication. Bridgeable for active balanced out to drive 70v lines. 2RU, 15Kgs. 5 year warranty. \$1537.

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CV CV Series amplifiers feature XLR and terminal strip input connections, 5-way binding posts and terminal strip output connections, Octal sockets for NexSys compatibility and for optional accessories such as Crossovers, Limiters, CD Horn EQ etc? Convection cooled, Front panel volume controls, 100 Volt transformer isolated

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Production Audio Services (03) 9415 1585

CKV Series CKV 70-7v series amps range from 50w @ 4 ohms per channel to 1200w @ 4 ohms per ch. sequential on/off, NexSys compatibility. \$2095.

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A.R. Audio Engineering

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Jands Electronics Pty Ltd

(02) 9582 0909

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MFA-900 2 RU, 450w + 450w - 4W/225w + 225w - 8W. Balanced inputs. Speakon connectors - output. \$2395.

MFA-1200 2 RU, 600w + 600w - 4W/300w + 300w - 8W. Balanced inputs. Speakon connectors - output. \$2895.

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Also A 2036: 250W/100V or 8W, 435W x 300D x 132H, 15.8kg. \$999.

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H7000 features Yamaha's H.E.D. technology. All the H series amplifiers are rated with a frequency response of 10Hz-50kHz +0dB, -1dB. 2 x 750 @ 8 ohms, 2 x 950w @ 4W, 1 x 1900w @ 8W (bridged). \$4495.

PA AMPS

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Acoustic Technologies

(07) 3376 4122

M-500 Series 2 two channels @ 250 watts/channel into 4 ohms. Level controls, -20dB and clip indicators, XLR input and output connectors, fan cooled. 2RU, 12kg. \$1395.

M-1000B Series 2 two channels @ 500 watts/channel into 4 ohms. 1200 watts bridge. Level controls, -20dB and clip indicators, XLR input and output connectors, fan cooled. 2RU, 16.5kg. \$2195.

M-800 Quad four channels @ 200 watts/channel into 4 ohms. Level controls, clip indicators, XLR input, binding post output, channel pairs bridgeable, fan cooled. 2RU, 16kg. \$2195.

AMPOWER

Amps Unlimited

(03) 9857 8580

AM 1500B 150w @ 4W balanced, XLR in/out, front level controls. External heat sinks and large 'easy grip' handles. Unbalanced version available. Dimensions - 482W x 88H x 365D. Weight 9Kg. \$925.

ES 2450 2 x 450w @ 4W, single present and clip LED's, balanced, XLR in/out, bridgeable 900w @ 8W. Thermal protection, short circuit protected. Rear mount fan and attenuators, X over facility. Dimensions - 482W x 135H x 280D. Weight 15Kg. \$1456.

ES 4450 4 x 450w @ 4W, single present and clip LED's, balanced, XLR in/out, bridgeable 2 x 900w @ 8W. Thermal protection, short circuit protected. Rear mount fan and attenuators, X over facility. Dimensions - 482W x 135H x 440D. Weight 26Kg. \$2765.

Buyer's Guide

Power Amplifiers

PRICES are RETAIL including tax as advised on September 1st 1997. Four models from each manufacturer shown, they usually have more. No responsibility for errors!

PA AMPS

continued

AA 20000 2 x 1000w @ 4W, single present and clip LED's, XLR inputs, binding posts out, thermally operated fan, short circuit protected. Front mounted attenuators, X over facility. Dimensions - 482W x 135H x 550D. Weight 32.5Kg. \$2550.

APOGEE SOUND

ESA Audio (03) 9562 4605
DA-600 digitally controlled, dual channel, bi-polar amp with split rail topology. 600w into 4 ohm. \$5046.

DA-700 digitally controlled, dual channel, bi-polar amp with split rail topology. 775w into 4 ohm. \$5327.

DA-800 digitally controlled, dual channel, bi-polar amp with split rail topology. 975w into 4 ohm. \$5608.

ARX

Arx (03) 9555 7859
SX800 2 RU, 2 channels, toroidal transformer based power supply, balanced XLR and jack inputs, binding post or Speakon outputs. Comprehensive protection circuitry. Output power 300w RMS/8 ohms, 400w RMS/4 ohms, bridged mono 8 ohms 800w RMS. \$1989.

SX1500 2 RU, 2 channels, toroidal transformer based power supply, balanced XLR and jack inputs, binding post or Speakon outputs. Comprehensive protection circuitry and SoftClip switch. Output power 490w RMS/8 ohms, 700w RMS/4 ohms, bridged mono 8 ohms 1400w RMS. \$2580.
SX3000 2 RU, 2 channels, toroidal transformer based power supply, balanced XLR and jack inputs, binding post or Speakon outputs. Comprehensive protection circuitry and SoftClip switch. Output power 660w RMS/8 ohms, 1000w RMS/4 ohms, bridged mono 8 ohms 2000w RMS. \$2580.

ASHLY AUDIO

Production Audio Services (03) 9415 1585

MFA Series dual channel mono-aural power amps, ranging from 800w per channel @ 4 ohms to 1200w per channel @ 4 ohms. Excellent protection, LED output meters. Accepts Powercard option. From \$5795.

FTX Series II dual channel Mosfet power amps, ranging from 190w per channel @ 4 ohms to 500w per channel @ 4 ohms. Excellent protection, LED output meters. Accepts Powercard option. From \$2095.

AUDIO TELEX

Audio Telex Communications P/L (02) 9647 1411
ACM2150 Dual channel 150 +

150 watt mosfet power amplifier, perfect for multi zone or multi channels applications. Basically two totally independent 150 watt amplifiers in one 2RU chassis. Selectable 100 volts or 4 - 8 ohms outputs. 240 VAC. Dual 10K balanced inputs/outputs per channel. Dual thermally controlled fans for cooling. \$1267.

AUSTRALIAN MONITOR

Australian Monitor (02) 9874 9355

AM3002 high power FET amplifier capable of sustaining 1800w into 2 ohms (single channel) 1500+1500 RE 2W, over 4000w music bridged into 4. 3RU, 33 Kgs. Same features as AM Series. \$4400.

AM1600 800+800 RE 4W, high current capable linear supply, Class AB linear output, 3 RU Alloy chassis, fully protected, balanced inputs, 10 segment level display, fault and thermal and status indication. 30 Kgs. 5 year warranty. \$3398.

AM1200 4 channel amplifier @ 300w per channel RE 4W. Linear supply and output stage, 3 RU, rugged alloy chassis, full protection features and indication, bridgeable pairs for high power stereo use. 29 Kgs. 5 year warranty. \$3398.
1K2 600w + 600w RE 4 ohms, 2 RU alloy chassis, dual 2 speed fans, linear supply and high performance AB output stage. True FTC rating, status and protection and indication. 19 Kgs. 5 year warranty. \$2751.

BRYSTON

Syntec (02) 9417 4700

2B 2 channel amplifier giving 50w @ 8W, 100w @ 4W and 200w bridged @ 8W. 20 year warranty. \$1599.

3BST 2 channel amplifier giving 120w per channel into 8W, 200w/p/c into 4W and 400w bridged at 8W. 20 year warranty. \$2459.

4BST 2 channel amplifier giving 250w per channel into 8W, 400w/p/c into 4W and 800w bridged at 8W. 20 year warranty. \$3739.

7BST mono block gives 500w at 8 or 2W, and 800w at 4W. 20 year warranty. \$3899.

CARLSBRO

F. Payton & Son (02) 9439 1822

CPX 1200 1200w, 22.4kg, balanced XLR and jack inputs, soft start power supply, binding post connections for loudspeakers, Dynamic Signal Limiting (to prevent clipping), speakon output sockets. \$2350.
CPX 800 800w, 19kg, balanced XLR and jack inputs, soft start power supply, binding post connections for loudspeakers, Dynamic Signal Limiting, speakon output sockets. \$1950.
CPX 600 600w, 17kg, balanced

XLR and jack inputs, soft start power supply, binding post connections for loudspeakers, Dynamic Signal Limiting. \$1650.

CPX 300 300w, 14kg, balanced XLR and jack inputs, binding post connections, Dynamic Signal Limiting, audio muting and forced air cooling by variable speed fan. \$1450.

CERWIN-VEGA!

Ashton Admor (08) 9478 3800

HED 270 2 channel 270w per channel @ 8W, 425w @ 4W or 2W, 750w bridged mono @ 8W. Continuous power, 2 RU, 11.8 Kg, energy limiters, soft clip speaker protection. \$1366.

HED 400 2 channel 400w per channel @ 8W, 600w @ 4W or 2W, 920w bridged mono @ 8W. Continuous power, 3 RU, 15.5 Kg, energy limiters, soft clip speaker protection. \$1787.

HED 500 2 channel 529w per channel @ 8W, 850w @ 4W, 1125w @ 2W, 1300w bridged mono @ 8W, 1700w bridged mono @ 4W. Continuous power, 3 RU, 17.7 Kg. \$2605.

CLOUD

Lightmoves Technologies (02) 9560 0000

CX A200 innovation four channel amplifier delivering 50w channel. All channels controlled by remote plates if required. All inputs are balanced, optional TRX. Modules allow 70v 100v output. \$1450.

CX A4 four channels at 120w each. All Cloud amps have fan cooling. LED peak indicators and provide optional VLA module for remote plates and TRX for 70v and 100v output. \$2300.
CX A6 6 channels at 120w each. All inputs have level adjustment. Each channel accepts own input or shared from another channel. Full flexibility allows multi-combinations of input/output. \$2995.

CREST AUDIO

Jands Electronics Pty Ltd (02) 9582 0909

V Series amplifiers feature 6.5mm and terminal strip input connections, Speakon output connections, Fan cooling, TourClass Protection Circuitry, Front panel volume controls and 20-segment LED meters. 3RU. Power ratings from 225 W/ch to 750 W/ch (4 ohms). From \$1295.

Vs Series amplifiers 6.5mm and terminal strip input connections, Speakon output connections, Fan cooling, TourClass Protection Circuitry and Rear panel volume controls. 3RU. Power ratings from 225 W/ch to 750 W/ch (4 ohms). From \$1595.

CA Series amplifiers feature XLR and 6.5mm jack input connections, Speakon output con-

nections, Fan cooling, TourClass Protection Circuitry and Front panel volume controls. 2RU (larger models 3RU). Power ratings from 250 W/ch to 1800 W/ch (4 ohms). From \$1495.

Professional Series amplifiers feature XLR input connections, 5 way binding posts output connections (NB. 9001 & 10001 utilise single screw copper lug output connectors), Fan cooling, TourClass Protection, Front panel volume controls, Octal sockets for NexSys compatibility and for optional accessories such as Crossovers, Limiters, CD Horn EQ etc? NexSys Ready. 2, 3 and 4RU. Power ratings from 280 w/ch (4 ohms) to 5000 w/ch (2 ohms). From \$3495.

CREST AUDIO

Production Audio Services (03) 9415 1585

V/Vs Series dual channel, from 225w @ 4 ohms per channel to 750w @ 4 ohms, TourClass protection, front attenuation and LED power meters (V Series only). Operates in mono, stereo or bridged. From \$1295.

CA Series dual channel, from 250w @ 4 ohms per channel to 1800w @ 4 ohms, TourClass protection, front attenuation, TRS and XLR inputs, ability to run into 2 ohms (stereo). From \$1695.

Pro Series ranges from 380w @ 4 ohms per channel to 5 Kw @ 2 ohms stereo. Original TourClass protection, NexSys compatible, XLR inputs, ability to run 2 ohms stereo. From \$3295.

CKS Series primarily for installed sound systems, CKS Series ranges from 75w @ 4 ohms per channel to 1400w @ 4 ohms per channel, sequential on/off, NexSys compatible. From \$2095.

CYBERLOGIC

System Sales (03) 9529 7755

NC-812 8 channel, compact, high power, configurable power amplification system. A range of options: 1600w 2W, 1200w 6W, 700w 8W. Voltage nail and gain adjustment on each channel. From ****

NC-807 8 channel, compact, high power, configurable power amplification system. A range of options: 900w 2W, 700w 4W, 400w 2W. Voltage nail and gain adjustment on each channel. From ****

NC-412 4 channel, compact, high power, configurable power amplification system. A range of options: 1400w 2W, 1200w 4W, 700w 8W. Voltage nail and gain adjustment on each channel. From ****

NC-412 4 channel, compact, high power, configurable power amplification system. A range

of options: 900w 2W, 700w 4W, 400w 2W. Voltage nail and gain adjustment on each channel. From ****

ELECTROVOICE

EVI Audio (Aust) P/L (02) 9648 3455

P1200 German built by EVI Audio, this 2 channel professional power amplifier delivers 550 per channel into 4W, 650w into 2W. Eight protection circuits. Rock solid 2RU chassis. XLR in (with loop out) speakon outputs. Also available P600. \$2599.

P3000 2 channel professional 'touring' power amplifier built in Germany. Delivers 1440 per channel into 4W, 1800w into 2W. Eight protection circuits. Totally separate power supplies inc. main fuses. Rock solid 3RU chassis. XLR in (with loop out) speakon outputs. Also available P2000. \$3999.

1.0 kW smallest in latest series of amplifiers from Electrovoice weighing only 7.2 kg. Delivers 450 per channel into 4W, 950w bridged into 8W. Incorporates Dynamic Signal ProcessingTM. 2RU. XLR in (with loop out). Binding post outputs. \$1999.

2.0 kW utilising dual mono construction, the 2.0 kW delivers 900 per channel into 4W, 1850w bridged into 8W. Weighs less than 10.5 kg. 2RU. Both XLR and jack inputs (with XLR loop out). Binding post outputs. Also available in 1.5 kW version. \$2699.

ESP TECHNOLOGY

ELSTA (02) 9568 2100

Power 400 Stereo amplifier, 200w per side into 4 ohm, bridgeable to 400w into 8 ohm mono, XLR inputs and outputs, 22Hz-100kHz frequency response, clip light indicators, 2 rack unit size, 12kg weight. \$399.

Power 800 Stereo amplifier, 400w per side into 4 ohm, bridgeable to 800w into 8 ohm mono, XLR inputs and outputs, can run four speakers, 22Hz-100kHz frequency response, clip light indicators, 3 rack unit size, 18kg weight. \$1599.

PA-150 Stereo amplifier, 150w per side into 4 ohm, bridgeable to 300w into 8 ohm mono, XLR inputs and outputs, 10Hz-30kHz frequency response, clip light indicators, 3 rack unit size, relay delayed turn on, overload protection circuitry. \$499.

PA-300 Stereo amplifier, 300w per side into 4 ohm, bridgeable to 600w into 8 ohm mono, XLR inputs and outputs, 10Hz-30kHz frequency response, clip light indicators, 3 rack unit size, relay delayed turn on, overload protection circuitry. \$699.

FENDER

Fender Australia (02) 9666 5077

SPL 6000 2 x 300w at 4 ohms, 600 at 8 ohms, bridged mono, 2 RU, 2 speed fan, speaker protection, delayed turn off and on. Delta-comp circuitry. 5 year warranty. \$1299.

SPL 9000 2 x 450w at 4 ohms, 900 at 8 ohms, bridged mono, 3 RU, 2 speed fan, speaker protection, delayed turn off and on. Delta-comp circuitry. 5 year warranty. \$1899.

SPA 13000 2 x 650w at 4 ohms, 1300 at 8 ohms, bridged mono, 2 RU, extensive protection circuitry, multi rail technology, switchable Delta-comp circuitry. 5 year w'ty. \$2795.
M500 500w at 2 ohms monitor amp, three sweepable notch filters with 25dB of cut, high and low pass filters, delta comp circuitry, 2 RU. 5 year w'ty. \$1199.

GEMINI

Disco World (03) 9735 0588

XG2000 250w RMS per channel @ 4 ohms. \$969.
XG3000 320w RMS per channel @ 4 ohms. \$1090.
XP800E 400w RMS per channel @ 4 ohms. \$1399.
XP1200E 600w RMS per channel @ 4 ohms. \$1849.

INFONICS

Infonics (02) 9489 0260

850P 8 channel professional power amplifier, 50w RMS/channel 8 ohms, 2 RU. Features microcomputer control of source to output assignment and volume. Includes microphone and 8 line inputs. \$1920.

JBL

Jands Electronics Pty Ltd (02) 9582 0909

MPX Series amplifiers feature 1/4", XLR and barrier strip inputs, and binding post outputs. Fan cooled and fully protected. High pass filters on all channels, 3RU. Power ratings from 300 w/ch to 1200 w/ch (4 ohms). From \$1995.

MFA Series amplifiers feature optional input modules that incorporating crossovers, CD Horn EQ, limiting etc? Output connectors are barrier strips, inputs 1/4" jacks and XLRs. Fully protected and variable speed fan cooling. 2RU and 3RU high. Power ratings from 275 w/ch to 1200 w/ch (4 ohms). From \$2995.

LEEM

C.M.I. (03) 9315 2244

LA-600 stereo power amplifier - 300w RMS per channel into 4 ohms, 600w RMS mono bridged into 8 ohms. 2RU. 17.5 kg. \$1149.

LA-900 stereo power amplifier - 450w RMS per channel into 4 ohms, 900w RMS mono bridged into 8 ohms. 2RU. 19 kg. \$1299.

LA-1200 stereo power amplifier - 600w RMS per channel

Buyer's Guide

into 4 ohms, 1200w RMS mono bridged into 8 ohms. 2RU. 20.5 kg. \$1449.

MACKIE DESIGNS

Australian Audio Supplies
043 884 666

M1400 dual differential, high current power amplifier, two channels, 1400 watts bridged into 4 ohms, 700 + 700 watts in 2 ohms, switchable 63Hz/120Hz electronic sub woofer crossover, sweepable 5Hz-170Hz, low cut filters, sweepable 2kHz-6kHz constant directivity horn compensation. 2RU. 16kg. \$1495.

MC2 AUDIO

Audiorep Australia
0411 183158

MC1250 Digital control intelligently monitoring all dynamic parameters. Complementary class AB. Phase compensated floating drive stage. Soft start. User selectable clip limiter and bridging, mute with fade up, optional computer control, crossover card, Hum & Noise -105dB, 2 x 1250 watts @ 4 ohms. \$4950.

MC650 Digital control intelligently monitoring all dynamic parameters. Complementary class AB. Phase compensated floating drive stage. Soft start. User selectable clip limiter and bridging, mute with fade up, optional computer control, crossover card, Hum & Noise -105dB, 2 x 650 watts @ 4 ohms. \$3,500.

MC450 Digital control intelligently monitoring all dynamic parameters. Complementary class AB. Phase compensated floating drive stage. Soft start. User selectable clip limiter and bridging, mute with fade up, optional computer control, crossover card, Hum & Noise -105dB, 2 x 450 watts @ 4 ohms. \$2,900.

NUMARK

U.L.A. 1800 648 111

SA 3000 stereo 300w @ 2 ohms, 200w @ 4 ohms, 130w @ 8 ohms, bridged 540w @ 4 ohms or 420w @ 8 ohms. Clip indication LED's, power-on speaker protection muting circuitry, fan cooled, thermal protection, balanced and unbalanced inputs, ground lift switch, rugged design. \$1199.

SA 5500 stereo 550w @ 2 ohms, 430w @ 4 ohms, 270w @ 8 ohms, bridged 1100w @ 4 ohms or 850w @ 8 ohms. Clip indication LED's, power-on speaker protection muting circuitry, fan cooled, thermal protection, balanced and unbalanced inputs, ground lift switch, rugged design. \$1399.

PEAVEY AA

Audio Telex Communications
P/L (02) 9647 1411

CS 800S Dual channel power amplifier, 600w per channel into 2 ohms, 420w per channel into

4 ohms, 240w per channel into 8 ohms, 1200w into 4 ohms bridged. 2RU. Modular inputs and outputs. Two variable speed fans for silent operation. 40v/msec per channel, <0.03 THD. \$1905.

CS 3000G Dual channel power amplifier, 1500w per channel into 2 ohms, 1000w per channel into 4 ohms, 600w per channel into 8 ohms, 3000w into 4 ohms bridged, 2000w into 8 ohms bridged. 3RU XLR and phone plug inputs per channel. Separate power transformers per channel. Two speed fan cooling. 40v/msec per channel, <0.04 THD. \$4683.

IP4C Dual channel power amplifier, 250w per channel into 2 ohms, 210w per channel into 4 ohms, 130w per channel into 8 ohms, 500w into 4 ohms bridged, 420w into 8 ohms bridged. 3RU. SPS compression feature protection. Table or rack mounting. Dual fan cooling. Other higher output models available in range, all can be optioned for 100v line output. \$1134.

PEAVEY

Australis (02) 9698 4444

PV 2.6 2 x 130w @ 4 ohms, 20Hz-20kHz, DDT output protection, 2 RU. \$699.

CS 800S all new version of industry standard, 2 x 600w @ 2 ohms, 2 x 400w @ 4 ohms. Modular input and output modules, 20Hz-20kHz, THD less than .03%. \$1699.

CS 3000G 2 x 1500w @ 2 ohms, 2 x 1000w @ 4 ohms, THD less than .04% and slew rate of 40 v/u sec. 20Hz-20kHz. \$3995.

PHONIC

CMC Music (02) 9905 2511

MAR 2 2 channels: 2 x 300w. 2 ohms: 2 x 230w. 4 ohms: 2 x 150w. 8 ohms: 2 RU: bridged mono 540w. 4 ohms/420w. 8 ohms: 12.5 Kg. Neutrik Combo connectors: dual-speed quiet fan: built-in protection. \$995.

MAR 4 2 channels: 2 x 550w. 2 ohms: 2 x 425w. 4 ohms: 2 x 270w. 8 ohms: 2 RU: bridge/stereo/parallel operation: switchable limiter: dual speed fans front and rear: Neutrik Combo connectors. \$1250.

MAR 6 2 channels: 2 x 1000w. 2 ohms: 2 x 650w. 4 ohms: 2 x 400w. 8 ohms: 3 RU: bridge/stereo/parallel operation: switchable limiter: dual speed fans front and rear: Neutrik Combo connectors. \$1550.

QSC AUDIO

A.R.Audio Engineering (02) 9810 5300

MXa Series two channel. From 400-1300w/ch @ 4W. 2/3RU. Two speed fan. Open input Architecture for internal limiters, Crossovers, EQ etc. Short-circuit, Open-circuit, Thermal, Ultrasonic and RF protection. Entech award winner. \$1995 -

\$3995.

Powerlight Series lightweight 8.2kg. Two channel. From 400-1000w/ch @ 4W. 2RU. Dual variable speed fans. Neutrik combo inputs. Data-port. DC, sub audio and thermal protection. Entech award winner. \$2295 - \$3995.

Powerlight 3.4 & 4.0 lightweight 13.6kg. Two channel. 1200 and 1400w/ch @ 4W. 3RU. Variable speed Neutrik combo inputs. Data-port. DC, sub audio and thermal protection. Entech award winner. \$4995 - \$5995.

RAMSA

Ramsaudio (02) 9477 7377

WP-1200 stereo, 120w per channel/8W, 200w per channel/4W, 2 RU, 11 kg, rear controls, stereo and bridge modes. \$1298.

WP-1400 stereo, 240w per channel/8W, 400w per channel/4W, 3 RU, 17 kg, rear controls, stereo and bridge modes. \$1548.

WP-9110 stereo, 100w per channel/8W, 150w per channel/4W, 2 RU, 13 kg, front controls, stereo, mono and bridge modes. \$1498.

WP-9220 stereo, 200w per channel/8W, 300w per channel/4W, 3 RU, 17 kg, front controls, stereo, mono and bridge modes. \$1925.

R.C.F.

Group Technologies (Australia) (03) 9872 5000

MFA-200 1 RU, 100w + 100w - 4W/50w + 50w - 8W. Speakon connectors - output. \$995.

MFA-500 2 RU, 250w + 250w - 4W/125w + 125w - 3W. Balanced inputs. Speaker connectors - output. \$1695.

MFA-900 2 RU, 450w + 450w - 4W/225w + 225w - 3W. Balanced inputs. Speaker connectors - output. \$2395.

MFA-1200 2 RU, 600w + 600w - 4W/300w + 300w - 8W. Balanced inputs. Speaker connectors - output. \$2895.

SAMSON

Electric Factory (03) 9480 5988

Servo 550 275w per side into 4 ohms, 19" rackmount, 3 RU high, 1/4" inputs, push terminal speaker outputs, 550w into 8 ohms (bridged mono), bipolar circuit design with servo control. \$999.

Servo 260 130w per side into 4 ohms, 19" rackmount, 2 RU high, 1/4" inputs, push terminal speaker outputs, bipolar circuit design with servo control. \$799.

Servo 170 85w per side into 4 ohms, 19" rackmount, 2 RU high, 1/4" inputs, push terminal speaker outputs, bipolar circuit design with servo control. \$579.

YAMAHA

Yamaha Music Australia (03) 9693 5111

P1600 features Yamaha's H.E.D. (High Efficiency Drive) technology which provides high power and reliability in a light 2U rack mount chassis. 2 x 175 @ 8W, 2 x 220w @ 4W. \$995.

P3200 features Yamaha's H.E.D. (High Efficiency Drive). All models include signal and clip LED's for each channel as well as power, temp and protection. 2 x 350w @ 8W, 2 x 500w @ 4W. \$1395.

P4500 features Yamaha's H.E.D. (High Efficiency Drive). All models include signal and clip LED's for each channel as well as power, temp and protection. 2 RU. 2 x 500w @ 8W, 2 x 680w @ 4W, 1360w bridged @ 8W. \$1695.

P4050 4 channel amplifier (4 x 50w @ 8W) in a compact chassis for rack installation. Practical, versatile operation with 2, 3 or 4 channels. 480mm x 56mm, 444mm. \$1995.

STUDIO AMPS

ALESIS

Electric Factory (03) 9480 5988

RA-100 clean, accurate amplification for reference monitoring, 100w per channel into 4 ohms, 75w into 8 ohms, massive heat sinks for noiseless force-air cooling, speaker protection circuitry for turn on/off. \$799.

AMPOWER

Amps Unlimited

(03) 9857 8580

AM 1500B 150w @ 4W balanced, XLR in/out, front level controls. External heat sinks and large 'easy grip' handles. Unbalanced version available. Dimensions - 482W x 88H x 365D. Weight 9Kg. \$925.

ES 2450 2 x 450w @ 4W, single present and clip LED's, balanced, XLR in/out, bridgeable 900w @ 8W. Thermal protection, short circuit protected. Rear mount fan and attenuators, X over facility. Dimensions - 482W x 135H x 280D. Weight 15Kg. \$1456.

ES 4450 4 x 450w @ 4W, single present and clip LED's, balanced, XLR in/out, bridgeable 2 x 900w @ 8W. Thermal protection, short circuit protected. Rear mount fan and attenuators, X over facility. Dimensions - 482W x 135H x 440D. Weight 26Kg. \$2765.

AA 20000 2 x 1000w @ 4W, single present and clip LED's, XLR inputs, binding posts out, thermally operated fan, short circuit protected. Front mounted attenuators, X over facility. Dimensions - 482W x 135H x 550D. Weight 32.5Kg. \$2550.

ARX

Arx (03) 9555 7859

SX300 2 RU, 2 channels, toroidal transformer based power supply, balanced XLR and jack inputs, binding post or Speakon outputs. Comprehensive protection circuitry. Output power 100w RMS/8 ohms, 150w RMS/4 ohms, bridged mono 8 ohms 300w RMS. \$1195.

SX500 2 RU, 2 channels, toroidal transformer based power supply, balanced XLR and jack inputs, binding post or Speakon outputs. Comprehensive protection circuitry. Output power 200w RMS/8 ohms, 270w RMS/4 ohms, bridged mono 8 ohms 540w RMS. \$1577.50.

ASHLY AUDIO

Production Audio Services (03) 9415 1585

SRA-120 dual channel, 1RU supplies 60w per channel @ 4 ohms, convection cooled, front attenuation, headphone jack. Based on Class A bipolar output section. \$1295.

CFT-1800 dual channel Mosfet power amplifier. 300w per channel @ 4 ohms, convection cooled, LED level meters. Designed for use in studios, post production and b'cast. \$1295.

AUSTRALIAN MONITOR

Australian Monitor

(02) 9874 9355

1K2-Studio 600w + 600w RE 4 ohms, 2 RU alloy chassis, dual 2 speed whisper quiet fans. Linear high current capable supply, true FTC rating. 19 Kgs. 5 year warranty. \$2751.

K88-Studio as per 1K2-Studio but 400 + 400w RE 4 ohms. THX approved. 17 Kgs. Balanced inputs, bridgeable, plug-in sig. processing slot, fault and status indication, fully protected. 5 year warranty. \$2562.

OPAL 2802 280+280 RE 4 ohm, 2 RU alloy chassis. Convection cooled amplifier with fan assist under high signal conditions. Linear supply, highly linear output stage. 15 Kgs. 5 year warranty. \$1537.

OPAL 120S as per Opal 2802 but with 175w+175w per channel RE 4 ohms, 13 Kgs, balanced inputs, bridgeable, fault and status indication, fully protected. 5 year warranty. \$1397.

BRYSTON

Syntec (02) 9417 4700

2B 2 channel amplifier giving 50w @ 8W, 100w @ 4W and 200w bridged @ 8W. 20 year warranty. \$1599.

3B2 2 channel amplifier giving 120w per channel into 8W, 200w/p/c into 4W and 400w bridged at 8W. 20 year warranty. \$2459.

4B2 2 channel amplifier giving 250w per channel into 8W, 400w/p/c into 4W and 800w bridged at 8W. 20 year warranty. \$3739.

7B2 mono block gives 500w at 8 or 2W, and 800w at 4W. 20

year warranty. \$3899.

CREST AUDIO

Jands Electronics Pty Ltd (02) 9582 0909

CC Series CC Series amplifiers feature XLR and terminal strip input connections, 5-way binding posts and terminal strip output connections, Octal sockets for NexSys compatibility and for optional accessories such as Crossovers, Limiters, CD Horn EQ etc? Convection cooling, Front panel volume controls, NexSys Ready. 3RU. Power Ratings from 325 w/ch to 540 w/ch (4 ohms). From \$3295.

CREST AUDIO

Production Audio Services

(03) 9415 1585

1001A 2 ch, convection cooled power amp. 55w per channel @ 8 ohms, 1 RU. Ideal for studio and broadcast environments. \$1695.

1501A 2 ch, convection cooled power amp. 90w per channel @ 8 ohms, 1 RU. Ideal for studio and broadcast environments. \$1995.

CC301 dual channel, convection cooled power amp for studio and broadcast environments. 360w per channel @ 8 ohms per channel, 3 RU, Class H. \$4345.

CC151 dual channel, convection cooled power amp for studio and broadcast environments. 180w per channel @ 8 ohms per channel, 3 RU, Class H. \$3275.

DYNAUDIO ACOUSTICS

Amber Technology

(02) 9975 1211

DA-A3 compact dual-channel: 350w RMS/ch @ 4W, 250w @ 8W, 700w RMS bridged @ 8W. 1U high x 8kg, digital gain controls, "signal" and "peak" LED indicators, jack and balanced XLR inputs. \$2995.

DCA-450 high performance studio amp: 450w RMS/ch @ 4W (or 2W), 250w @ 8W. Class AB bi-polar outputs, selectable clip limiters with "tight" and "easy" modes, headroom level indicators and mute switches. 2U high x 22kg. \$5495.

DCA-650 bigger brother of DCA-450: 650w RMS/ch @ 4W (or 2W), 350w @ 8W. Digital control system for load, temperature and all operating parameters, optional 24dB/octave X-over available. 2U high x 22kg. \$6495.

SPA-1032 RMS power per channel: 500w @ 2W, 400w @ 4W, 280w @ 8W. "Sliding bias" class AB design, hand-built to mil. specs. 3U high x 18kg. \$9595.

FENDER

Fender Australia

(02) 9666 5077

SPA3000 2 x 150w at 4 ohms, 300 at 8 ohms, bridged mono, 1 RU, Delta-comp circuitry,

Buyer's Guide

Power Amplifiers

PRICES are RETAIL including tax as advised on September 1st 1997. Four models from each manufacturer shown, they usually have more. No responsibility for errors!

PA AMPS

continued

headphone O/P, multi rail technology. 5 year warranty. \$999.

HAFLER

Australian Audio Supplies
043 884 666

P1000 reference amplifier, stereo, 50 watts/channel into 8 ohms, one rack unit, patented 'Nomad' design, 20 V/US slew rate, 5.5kg, balanced 1/4" + XLR. Made in USA. \$995.

P1500 75 watts/channel into 8 ohms, two rack unit, high voltage lateral mosfets, 100 V/US slew rate, quiet balanced circuitry, no fan, two channel or mono mode, 9kg. Made in USA. \$1395.

P3000 150 watts/channel into 8 ohms, two rack unit, two channel, new high voltage lateral mosfets, 100 V/US slew rate, precise imaging, 0.15Hz-300kHz, 11kg. Made in USA. \$1895.

P7000 trans-nova diablo stereo amplifier, 375 watts/channel into 8 ohms, two rack unit, two second order crossovers per channel, 100 V/US slew rate, 18kg. Made in USA. \$2995.

MASS TECHNOLOGY

Music Link (03) 9429 9299

Mass 150 75w @ 4W, THD: <0.05%, signal noise: >95dB, 8kgs, British made studio amplifier. \$899.

Mass 250 125w @ 4W or 75w @ 8W, THD: <0.05%, signal noise: >100dB, <25v/US slew rate, chrome panel, British made studio amplifier, no fan, 2 RU. \$1199.

Mass 500 THD: <0.05%, signal noise: >100dB, <25v/US slew rate, chrome panel, British made studio amplifier, no fan, 2 RU. \$1499.

MC2 AUDIO

Audiorep Australia 0411 183158

MC1250 Digital control intelligently monitoring all dynamic parameters, Complementary class AB, Phase compensated floating drive stage, Soft start, User selectable clip limiter and bridging, mute with fade up, optional computer control, crossover card, Hum & Noise -105dB, 2 x 1250 watts @ 4 ohms. \$4,950.

MC650 Digital control intelligently monitoring all dynamic parameters, Complementary class AB, Phase compensated floating drive stage, Soft start, User selectable clip limiter and bridging, mute with fade up, optional computer control, crossover card, Hum & Noise -105dB, 2 x 650 watts @ 4 ohms. \$3,500.

MC450 Digital control intelligently monitoring all dynamic parameters, Complementary

class AB, Phase compensated floating drive stage, Soft start, User selectable clip limiter and bridging, mute with fade up, optional computer control, crossover card, Hum & Noise -105dB, 2 x 450 watts @ 4 ohms. \$2,900.

PEAVEY

Audio Telex Communications
P/L (02) 9647 1411

IPS150 Dual channel stereo power amplifier, 75w per channel into 4, 8 or 16 ohms (selectable). Typical frequency response + or - 1 dB, 1w RMS at rated load 10Hz to 40kHz. 1RU. SPS compression feature per channel, electronically balanced screw terminal inputs. Convection cooled. Ground lift switch. \$1079.

QSC AUDIO

A.R.Audio Engineering
(02) 9810 5300

USA400 two channel. 250w/2W, 200w/4W, 125w/8W. 3RU. Convection cooled. Neutrik combo inputs. Switchable limiter and low frequency filter. Short-circuit, open-circuit, thermal, ultrasonic and RF protection. \$1095.

MX700 two channel. 325w/2W, 270w/4W. 2RU. Two speed fan. Low distortion class AB output circuit. Short-circuit, open-circuit, thermal, ultrasonic and RF protection. \$1295.

Powerlight 1.0 lightweight 8.2kgs. Two channel. 500w/2W, 400w/4W. 2RU. Variable speed fan. Neutrik combo inputs. Data-port, DC, sub audio and thermal protection. \$2295.

RAMSA

Ramsaudio (02) 9477 7377

WP-1200 stereo, 120w per channel/8W, 200w per channel/4W, 2 RU, 11 kg, rear controls, stereo and bridge modes. \$1298.

WP-1400 stereo, 240w per channel/8W, 400w per channel/4W, 3 RU, 17 kg, rear controls, stereo and bridge modes. \$1548.

WP-9110 stereo, 100w per channel/8W, 150w per channel/4W, 2 RU, 13 kg, front controls, stereo, mono and bridge modes. \$1498.

WP-9220 stereo, 200w per channel/8W, 300w per channel/4W, 3 RU, 17 kg, front controls, stereo, mono and bridge modes. \$1925.

R.C.F.

Group Technologies (Australia) (03) 9872 5000

MFA-200 1 RU, 100w + 100w - 4W/50w + 50w - 8W. Speakon connectors - output. \$995.

MFA-500 2 RU, 250w + 250w - 4W/125w + 125w - 8W. Balanced inputs. Speakon connectors - output. \$1695.

MFA-900 2 RU, 450w + 450w - 4W/225w + 225w - 8W. Bal-

anced inputs. Speakon connectors - output. \$2395.

MFA-1200 2 RU, 600w + 600w - 4W/300w + 300w - 8W. Balanced inputs. Speakon connectors - output. \$2895.

SONY

Sony Australia (02) 9887 6666

SRPP15 2 channels, 150w RMS/Ch @ 8 ohms, 250w/Ch @ 4 ohms, 500w RMS bridged 8 ohms. Balanced inputs on XLR, 6.5mm and barrier strips, input attenuators. 3RU. \$1290.

SRPP26 2 channels, 250w RMS/Ch 8 ohms, 400w/Ch 4 ohms, 800w RMS mono 8 ohms. Balanced inputs on XLR, 6.5mm and barrier strips, input attenuators. 3RU. \$1495.

SYMETRIX

Audio Telex Communications
P/L (02) 9647 1411

420E Studio quality stereo power amplifier. 20 watts per channel into 8 ohms or 40 watts mono into 8 ohms. 1RU. For near field monitors or small reference speakers etc. Front panel headphone output, or can drive multiple headphone sets such as AKG K-240 to 122 dB SPL from the rear panel terminals! \$933.

SYNCHROTECH

Hi-DEFINITION
Synrotech Systems Design
(02) 9879 0800

SSHD 200 High quality, High definition amplifiers designed to fully complement the range of KRK studio monitors, providing full bandwidth, low noise, fast transient response with stable imaging. 2 x 100w @ 8 ohms. \$1,395.

SSHD 400 As above but 2 x 200 watts @ 8 ohms. \$1,841.

SSHD 600 As above but 2 x 300 watts @ 8 ohms. \$2,325.

SSHD 1000 As above but 2 x 490 watts @ 8 ohms. \$3,100.

YAMAHA

Yamaha Music Australia
(03) 9693 5111

A100a housed in a compact, space saving package, the A100a delivers big sound - 2 x 50w @ 8W, 220mm x 96mm x 296mm. \$749.

P1600 2 x 175w @ 8W, 2 x 222 @ 4W, the new P-Series amplifiers feature Yamaha's High Efficiency Drive (HED) technology for high power, reliability and low cost usage. 2 RU, 19". \$995.

MIXER AMPS

AMPOWER

Amps Unlimited
(03) 9857 8580

FF 4150 150w mono @ 4W 4 channel mixer. Volume/bass/treble and reverb each channel.

Master volume and reverb. Black carpet finish. Dimensions - 453W x 230H x 300D. Weight 13Kg. \$850.

FF 8450 250w mono @ 4W 6 channel mixer. Volume/bass/treble, reverb and foldback each channel. Master 7 band graphic EQ. Master volume, reverb, foldback and echo. Black carpet finish. Dimensions - 530W x 280H x 300D. Weight 17.5Kg. \$1175.

FF 8400 400w mono @ 4W 8 channel mixer. Volume/bass/treble, reverb and foldback each channel. Master 7 band graphic EQ. Master volume, reverb, foldback and echo. Black carpet finish. Dimensions - 625W x 280H x 345D. Weight 22Kg. \$1325.

BIAMP SYSTEMS

Production Audio Services
(03) 9415 1585

CMA Series 6 channel mixer w/30w, 60w or 120w into 100v line. All inputs mic or line, page-over muting function, remote capabilities, bass and treble output controls. From \$1195.

IWA Series 6 channel wall mount mixer w/60w or 120w amp plus 60w zone amp. Independent zone and main outputs, 9 band output EQ, built in security panel. From \$2825.

RPM Series 8 channel rack mount mixer w/300w or 360w amp plus 60w zone amp. Independent zone and main outputs, 9 band output EQ, 3 band EQ on inputs. From \$2975.

FENDER

Fender Australia (02) 9666 5077

PX2212D graphic EQ, power amp, digital FX, roadcase and stand combination, 2 x 300w at 4 ohms, 2 aux. 2 FX sends, 3 way EQ. Can run stereo, mono FOH/FB, 2 x F/B sends etc. 16 channel version also available. 5 year warranty. \$3999.

SR6520D 520w at 2 ohms, spring reverb, phantom power, 9 band GEQ, 2 aux. Also available in 4 and 8 channel versions. 5 year warranty. \$1699.

SRM6302 2 x 150w at 4 ohms, footswitchable spring reverb, 9 band GEQ tandem or mains/monitor configuration. Also available 8 channel version. 5 year warranty. \$1299.

LX1504 150w at 4 ohms, spring reverb, 2 band EQ, 1 rev and 1 mon aux. Comprehensive patch bay. Also available 6 channel version. 5 year warranty. \$799.

KINETIC

Horwood Australia
(02) 9585 1011

MA-6100 8 ohm, 70-7 and 100 volt output; 100w @ 4 ohms; voice operated switching; 6 input channels; ideal for BGM/paging systems and all installations. \$1100.

MA-6200 8 ohm, 70-7 and 100

volt output; 200w @ 4 ohms; voice operated switching; 6 input channels; ideal for BGM/paging systems and all installations. \$1280.

INFONICS

Infonics (02) 9489 0260

850P 8 channel professional power amplifier, 50w RMS/channel 8 ohms, 2 RU. Features microcomputer control of source to output assignment and volume. Includes microphone and 8 line inputs. \$1920.

LEEM

C.M.I (03) 9315 2244

LP-1447 14 channel stereo, desk style mixer amp, 700w RMS into 4 ohm, 3 band EQ with mid sweep control, 100 mm faders, PFL, -20dB pad and insert inputs on all channels, 9 band master EQ, phantom power. \$1999.

VP-512D 12 channel stereo, desk style mixer, 500w RMS into 4 ohm, 1/4 and XLR inputs, 4 band individual channel EQ, 7 band master EQ, digital delay, peak LED pad, PFL, 18 kg. \$1699.

PM-802D 8 channel stereo, 300w RMS into 4 ohm, "head" style mixer with digital delay, phantom power, 5 band master EQ, RCA in/out, effects send/return. \$899.

PM-602D 6 channel stereo, 200w RMS into 4 ohm, "head" style mixer. Effects as above. \$749.

PEAVEY AA

Audio Telex Communications P/L (02) 9647 1411

IRM8150 8 channel rackmount mixer amplifier. XLR mic input and "line" inputs per channel. 3 band EQ, aux and monitor outputs, 9 band graphic EQ on master output. 150 watts RMS into 4 or 8 ohms or 70/100 volt line. 20Hz - 20kHz on direct outputs, 50Hz - 20kHz via transformer output. Tape in/out. 5RU. 240VAC. \$1668.

PEAVEY

Australis (02) 9698 4444

XR 600E 2 x 150w, 6 channel, reverb, 3 band EQ each channel. Master 9 band graphic, phantom power, patchy facility. \$1195.

XR 560 5 mic channel plus 1 x stereo live channel, 150w, 9 band graphic, digital reverb plus exclusive feedback locator system. \$995.

XRD 680 PLUS 2 x 300w, 8 channel, digital effects section, 9 band graphic, can be configured as FOH or FOH plus monitor system. Powerful and portable. \$2399.

XRD 680S PLUS as above with stereo capability. \$2499.

SAMSON

Electric Factory (03) 9480 5988

S63 200w into 4 ohms, 19"

rackmount, 10 band master graphic EQ, 3 band EQ per channel, onboard reverb, 2 aux sends. \$1199.

S83 300w into 4 ohms, 19" rackmount, 10 band master graphic EQ, 4 band EQ per channel, onboard reverb, 2 aux sends. \$1499

SPIRIT

Jands Electronics Pty Ltd (02) 9582 0909

Power Station 12/2 Powered Mixer, 8 Mono & 2 Stereo inputs, 300W per ch (4 ohms), Lexicon Digital Effects processor inbuilt, 7 band Stereo Graphic. Fully protected varispeed fan cooled amplifier sections, versatile patchbay for easy setup. Rack mountable. \$4295.

PowerPad 10/2 Compact Powered Mixer. Folio NotePad mixer stage, 4 Mono & 2 Stereo inputs, Phantom Power, Fully protected varispeed fan cooled amplifier sections - 30W per ch. \$995.

UNIVERSITY SOUND

EVI Audio (Aust) P/L (02) 9648 3455

2303 30w 3 channel "Power DockTM" mixer/amplifier transformer balanced inputs with mic-to-line level gain adjustments. "Dock" for accessories such as tuner cards, EQ cards etc. Also available in 6 channel version (2603). \$979.

2606 60w 6 channel "Power DockTM" mixer/amplifier transformer balanced inputs with mic-to-line level gain adjustments. "Dock" for accessories such as tuner cards, EQ cards etc. Also available in 3 channel version (2312). \$1619.

2612 120w 6 channel "Power DockTM" mixer/amplifier transformer balanced inputs with mic-to-line level gain adjustments. "Dock" for accessories such as tuner cards, EQ cards etc. Also available in 3 channel version (2312). \$1619.

YAMAHA

Yamaha Music Australia
(03) 9693 5111

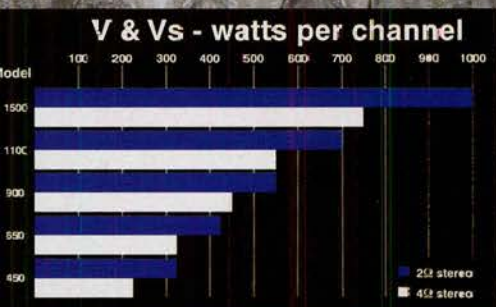
EMX640 6 channel inputs, 3 band EQ, monitor, aux send with digital effects and 7 band graphic, H.E.D. amps, 2 x 200w @ 4W. \$999.

EMX350012 12 dual A/B (balanced) inputs, 3 band EQ (mid sweep), 3 aux, inserts, integral digital effects, stereo 9 band graphic, PH. power, 2 aux returns, 2 x 350w @ 4W. \$3595.

EMX350016 16 dual A/B (balanced) inputs, 3 band EQ (mid sweep), 3 aux, inserts, integral digital effects, stereo 9 band graphic, PH. power, 2 aux returns, 2 x 350w @ 4W. \$3995.

Quite a few, aren't there?

for those about to rock



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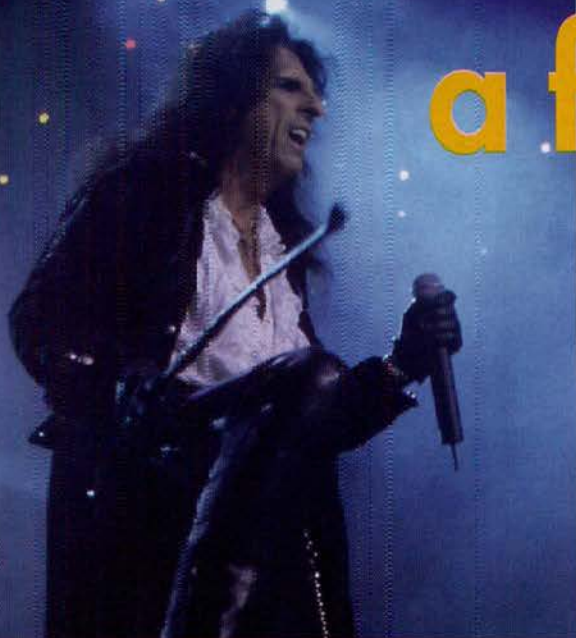
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 Write in Reader Service Number: 122



ON TOUR

a fistful of **ALICE**



were all going home the next day after nearly four months on the road - 'although it seems like a year' said one crew member. An end of tour party was arranged for that night at the Sebel and the crew had 'chick passes' to give out. Alice was not

expected to attend - it was a bit too late a night for him.

Lighting designer Ralph Ferreri has been with Alice since 1990 and for this tour, he has designed the show to look like a circus. Props include a toy box which Alice comes out of at the beginning of the show, a mummy's tomb which he disappears in to and one of those ring the bell games which

effect of the Vari*lites. Festooned between the trusses were multi-coloured fairy lights to enhance the carnival theme. A back drop depicting a carnival set was used.

"The first five songs just use a set wash with the Vari*lites doing the work," Ralph described. "Then we gradually kick in the lights."

The crew were still reeling from a scathing review of the Brisbane show the night before. During the second number the power failed.

"It was at the Entertainment Centre," said Ralph. "One of the legs on the power went and all the band gear went out. The PA and the monitors stayed on. We were lucky because it was sorted out real quick and we were only down about 30 seconds."

Apparently one punter was so unhappy with the sound in Brisbane she demanded her money back and got it.

FOH man Steev Toth and his monitor man Kevin McCarthy are affectionately known as the Feedback Twins as every night they have to deal with Alice's habit of standing right in front of the PA. It had got to the point where Steev could usually predict this event and he would have his finger ready on the mute button.

Steev had few effects - H3000, SPX 1000, SPX 900, TC 229C, BSS compressors, Drawmer gates and Summit compressors for Alice.

"They're not the effects I prefer," said Steev. "For instance on drums, I prefer to use Lexicon PCM70 and PCM80's. I prefer preset sounds, I don't like editing any sounds at all and I don't really like using effects. With this band, two of the guitars have effects pedals so I don't need anything on that. The drums are tuned really high and tight, and tonight I'm using a

continued over

In 1990 when Alice Cooper last toured Australia, he sold out entertainment centres around the country delivering the kind of camp horror show you'd expect. No chicken or snake was safe. At that time Alice had a hit album and a reputation.

Seven years later there have been no more hit records and not surprisingly the tour was not successful in terms of ticket sales. In Perth only about 6000 seats of the 8000-seat Entertainment Centre were sold. Prior to the tour, Alice Cooper appeared on several TV programs plugging his show, appearing a reformed man. He doesn't drink anymore (he used to drink two bottles of whisky a day), he doesn't party (he's found God and, get this, he's up at 7 am most mornings to go play golf!! Not the sort of admissions to help ticket sales. That's not what the punters want - they want to see raucous behaviour, they want to see a chicken's head bitten off, they want pseudo-gore

Okay, the snake is still there and, due to Australian quarantine laws, a different snake had to be used in each state. I was told the snake in Adelaide was very uncooperative. The snake in Sydney fared better - he even had a guest list of five.

Sydney Entertainment Centre was not full by any means but there were plenty of die-hard fans who seemed to enjoy what was the last show of the tour. The atmosphere amongst the crew was jovial as they

you hit with a hammer to test your strength. Even the backline guys are dressed up like clowns. Hhhmm, but they loved that idea. During the show, they regularly come on stage to tease and torment Alice.

"Alice wanted to go back to giving the people a little bit more for their money" said Ralph.

The rig had 180 par cans (60 mediums and 120 very narrows), 12 V16's (10 in the air and 2 on the ground), and a bunch of audience specials. Three straight trusses were used as Alice wanted the look to be old fashioned as opposed to the modern



Photos: Cal Fencer

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ON TOUR

gated reverb off the SPX 900 - I just change the alignment slightly. I use the H3000 for a reverb, reset or chorus for the guitars. I don't use any effects on the vocals apart from the TC 2290 which gives a 75 milli-second delay for a little flange. The same for Alice's vocal as well - just a little shimmer and that's it.

"We did two nights in London and the first night got an amazing review for the sound about how all the effects were balanced out and it all sounded so crystal clear etc. The thing is, I didn't use any effects in Europe at all! When you have too many effects, you get too many problems. Generally what ever I'm given I can use."

In Sydney Steev was using a Yamaha PM4000 mixing console which is his choice desk because he likes the EQ.

"I don't like Midas desks and in the States I used a Langley Amek because we had four bands on the bill," he said. "I'm not a fan of the EQ on the Langley as it's not parametric. It also has built in compressors and gates into each channel which is interesting and can be useful."

All the microphones on the tour are Shure because both Steev and Alice have a deal



with them. Alice used a wireless SM58.

Steev was on his third PA of the Australian tour. He started with an EAW system in Perth, then a Turbosound TMS3 followed by a Turbosound Flashlight/Floodlight system.

"The Flashlight system is a bit too harsh for this style of music," Steev explained. "We have two guitars which are quite 'bright' and it tends to brighten the whole system up and it can be a little bit harsh on the ear. Plus, if Alice is a bit tired he tends to sing in a higher register which is not best suited to a SM58 microphone. So with the Turbosound rig the sound is quite brittle and we tend to have a lot of high

frequency floating around hence the feedback business. I get my fair share of feedback but I don't tune the systems as well as I should do, especially here in Australia, because I'm so busy with my other job as Tour Manager."

Lighting in Sydney, Melbourne and Adelaide was supplied by Chameleon Touring Systems, in Brisbane by East Coast Lighting and in Perth by Concert & Corporate Productions. Sound in Sydney, Melbourne and Adelaide was supplied by ACP and by A.A.A. Productions in Perth.

● **Cat Forcer**

TOUR PERSONNEL

Toby Mamis Manager **Shep Gordon** Manager **Steev Toth** Tour Manager/FOH **Ralph Ferreri** Lighting Director **Tom Hanlon** Production Manager **Jeffrey Mann** Drum Tech **Brian Nelson** Production Assistant **Kevin McCarthy** Monitors **Bob Phaup** Stage Manager/Props **Kenny Barr, Rob Belcher** Guitar Techs **Jim Fitzpatrick** Vari-lite Operator **John Camp** Security Director

ROUGH RIDER

Why is it that performers always get given the advice never to work with children or animals yet nobody ever gives that very sound piece of advice to technicians? Performers only run the risk of being upstaged which is hardly life threatening now is it?

Yet technicians are frequently given the more undesirable jobs associated with animals performing on stage. Why do people assume that just because you can whip open a dimmer rack in semi-darkness while a hypertense producer scream obscenities at you and swap a fuse in the space of a nanosecond: that you can deal with the unpredictable behaviour of animals?

Especially the type of animal that could only really be comfortable on about 300,000 acres somewhere in the outback with hundreds of other smaller animals to hound and have their way with in a culinary sense.

Animals that any sane person can see should definitely not be cooped up in the 3x2 metres compound they've been allocated backstage? This

is a mystery I just don't understand. Imaging this scenario: a Rider comes in about a show that's touring through requesting 15 staff to be available to assist with the animals.

Now if it were me deciding who the staff should be I would be on the phone to the local RSPCA, vet, dog clubs, cat clubs, Shetland pony clubs, lovers of tiger clubs etc etc etc. I would NOT be approaching the long list of casual crew scanning for unsuspecting victims who I haven't been able to give much work to lately. But that's just me. Obviously much too logical by half as they say.

These unsuspecting crew get a phone call and in all the excitement of getting their first gig since Alice Cooper last bit the head of a chook say YES, without actually taking in the details of the tasks to be performed. The phone call would have gone something like this:

Megalomaniac Production Manager: "Are you available to work from August 1st through to September the 2nd

on a show that actually doesn't require you to use any of the skills you've been trained in but rather requires you to perform a humiliating task involving large animals and a shovel in front of a crowd of about 2000 people; some of whom will probably know you?"

Desperate Crew Member: "YES!"

MPM: "You'll be paid five dollars per hour as per the award that covers desperate crew members who'll do anything for a gig, is that OK?"

DCM: "YES, YES YES!"

MPM: "Great, make sure you wear blacks; preferably made out of plastic or rubber."

Need I say more? Just be wary the next time a potential employer asks you if you like animals, it's my bet that he's not about to ask you to housesit the corgi while he's away on holidays.

Rufus B.



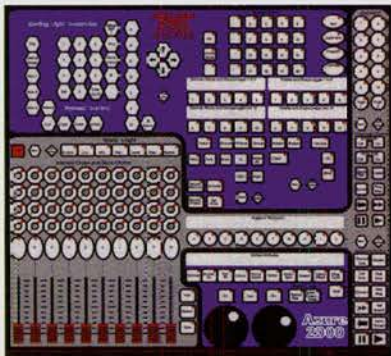
LIGHTING

October 1997

MONTHLY

Edited by Catriona Forcer

AVOLITES AZURE 2000



Avolites made a major new launch at PLASA 97 with their Azure 2000 lighting console. Although aimed primarily at nightclubs and time-coded industrial shows, its features also make it suitable for environmental and architectural applications, theatre and television.

Features include 5C direct access memories and chases per page with 10 labelled pages. Chases may be run from multi-frequency sound-to-light triggers and timed overrides, programmed times or the 'Learn Tempo' function. This allows synchronisation of chases to the current beat by tapping the tempo button.

A pre-loaded fixture palette with up to 200 entries gives instant access to all possible colours, gobos, beam effects and positions. This may be applied to individual fixtures or any of the 200 available groups. Also pre-loaded are 200 moving light 'shapes', including complex waves, fans, ballyhoos and shutter and iris sequences. New shapes and patterns can be created.

Australian Distributor: LSC Electronics (03) 9561 5255.

new releases PLASA

PAR-fume



The PAR-fume is a unique smoke machine capable of producing high volumes of smoke from a compact housing cunningly disguised as a Par lantern. Specifically designed for hanging, the PAR-fume is ideal for exhibition stands and shop window displays. Fitted with a drip tray as standard, the PAR-fume uses a copper coil/heating element removing all concerns of melt down and associated problems. It can be controlled from a hand held battery remote, variable timer control or from an analogue lighting desk. A DMX version is in development. Manufactured by Lighting Technology 0011 44 181 965 6800

MAC 500



PLASA 97 saw the debut of the MAC 500 moving head profile which joins the already highly successful MAC 600 moving head fresnel luminaire and the MAC 200, the powerful moving head colour changer.

The MAC 500 has two motorised colour wheels with a total of 14 dichroic colours and four dichroic CTC filters. Combined the two wheels yield 100 mixable colours. Added to these are two motorised gobo wheels with five interchangeable, indexed rotating gobos and nine fixed gobos. Beam effects include a motorised iris and a rotating 3-facet prism, while a combined microstep-driven dimmer and shutter can produce variable strobing. The motorised focus on the MAC 500 can produce a maximum beam angle of 15°.

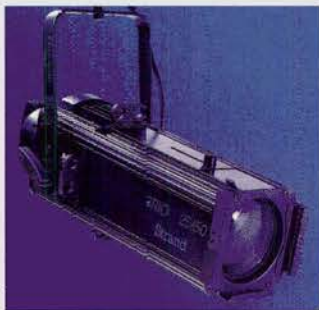
Australian Distributor: Show Technology (02) 9598 1111.

STRAND PRODUCTS

Strand had their new Brio 300W zoom 'coolbeam' on show as well as the Quartet Mk2 range of 650W spotlights. The Brio 600W is a compact, lightweight spotlight which provides a wide range of beam angles in one unit, as well as the advantages of a glass dichroic optical system. The fixture is offered in two versions, 18° to 30° and 25° to 50°.

The Quartet Mk2 range includes a 15/25 variable profile which replaces the old fixed angle Quartet 25. There is a Quartet 22/40, a Quartet F compact fresnel spotlight, and a Quartet PC spotlight.

Also on show was the GeniusPro range of consoles which come in a choice of three sizes: GeniusPro 550, the largest in the range with 54 submasters; GeniusPro 530, with 50 submasters; and GeniusPro 520 the portable model with 24 submasters but including most of the 530/550 features.



Australian Distributor: Bytecraft (03) 9597 2555.

the UNICLAMP

Triple E has designed a clamp which will allow riggers to locate luminaires, speakers or other equipment easily and safely on rigging without lifting the fixture off the bar. The UniClamp is offered up to 50mm diameter rigging/scaffold bar and closed around it in one simple action and a safety pin is then inserted to prevent the clamp opening. Four wheels set into the top of the clamp allow fixtures to be wheeled along the bar into position, where the UniClamp is locked securely into place using a conventional thumb screw. The UniClamp will be particularly useful for positioning heavy but fragile equipment such as automated lanterns and speaker clusters.



Each UniClamp, which has been designed to be totally compatible with accessories from other rigging manufacturers such as Dougry, is capable of suspending up to 50kg and two or more clamps can be linked together to spread the weight of heavier fixture.

Triple E 0011 44 171 580 6334



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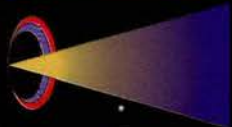
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S Y S T E M S
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ABSTRACT



Garry Fleetwood, designer of the VR8, with ULA's Con Biviano

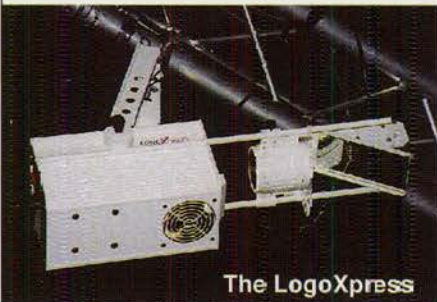
One of the talks of the show was the **Abstract VR8**, the first of a series named - VR4, VR8, VR12 and VR16. Beautifully designed, the VR8 is aimed for venues where the design and appearance of the lighting fixture is of importance. Abstract are developing a colour coating system for the VR range allowing designers to specify their scanners in a comprehensive range of vivid Pantone colours.

The VR8 has a full digital display function that indicates performance parameters such as the usage of the 150W discharge lamp, and full mode select for the unit.

360° rotation of both the colour and the gobo wheels, along with a custom gobo slot - all driven by a new generation of stepper motors, create rainbow effects. The use of a trapezoidal colour system produces seamless movement between the 12 dichroic colours.

Abstract also launched the **LogoXpress** rotational lighting projector which uses a lamina coating system that allows complete y normal 35mm slides to be used without melting or image deterioration. A range of attachments such as colour wheels, deflection mirrors, rotators, slide changers, prisms and other effects such as rain, fire and oil wheels make the unit flexible and cost effective.

Australian Distributor: ULA (07) 5532 9522.



The LogoXpress

PIXELSCAN

One of the most innovative products on show at PLASA 97 was the PixelScan, a moving mirror luminaire with a colour LCD video panel in its light path. PixelScan, a unique presentation and display media system, is designed and manufactured in the UK by Henderson Stage Lighting (HSL) and marketed by Lamba plc. PixelScan allows the operator to display not only pre-defined gobos, but also any custom design imaginable, be it a corporate logo or thematic seasonal set of gobos (such as your own Christmas or party gobos). This is achieved by simply creating, or scanning in the designs with any off-the-shelf PC imaging tool (Photoshop, Corel Draw, Paint) and then downloading them to the PixelScan luminaires. Within seconds, the new gobos are ready to use.

The ultimate gobo is composed by the creation of a series of related gobos, which produce an animated display by real-time sequencing. And by connecting four or more PixelScans together via an off-the-shelf video splitter, a unique videowall, with some unique characteristics, can be created.



It is (a) Moveable - because the 360° pan facility allows image projection in any direction; and (b) Rotatable - since the indexable image rotation system allows any image or video to be rotated through 360°.

PixelScan will also deliver TV commercial type effects such as Roll-up and Morphing (the smooth changing of one image into another). With PixelScans, coupled with any of-the-shelf effects generator, these techniques can now be projected anywhere in the venue ... in real time and in full colour.

The high-impact visual of a moving video promotion - projected anywhere in 3D space - is now feasible by using PixelScan under the control of the Win Commander and a time-coded video player.

Put simply, if you can video it, draw it, scan it or create it, then PixelScan can display it - any time, any place, at any angle, and literally anywhere. Lamba plc +44 1727 840527

LE MAITRE

Le Maitre introduced their new smoke machine, the **Star** (Sequentially Tracked Automatic Reissue) **Hazer** which is ideal for the club market. Le Maitre are currently applying for a patent on the machine which has Instant High Output Hazing, which means no heat up time with Low Mass (50gms) and Low Voltage Plug In Haze Module for easy servicing.



Le Maitre also had on show the Faint Land Mines shown in the photograph. These are used by the military for training - when one is detonated you get splurged by paint!

Australian Distributor: Smoke Machines - ULA (07) 5532 9922/Pyrotechnics - Lightmoves Technologies (02) 9560 0000.



LIGHTNING STRIKES!



Lightning Strikes! manufacture lighting effects technology for sets, locations and concert stages. At PLASA they launched the 40,000W Lightning Strikes! system which combines precise control with intensely bright light - more than a million lumens of 56000 Kelvin daylight. Perfect for interior or narrow exterior shots. Lightning Strikes 011 1 213 46 6361.

GamChroic

Great American Market - GAM - launched their new range of high temperature, heat resistant dichroic glass colour filters called GamChroics. Precise optical coatings on 1/8 inch thick glass (3.3 mm) make a highly heat resistant, durable and long lasting colour filter that is ideal for low maintenance installa-

tion. Available in 20 unique colours, GamChroics come in a variety of traditional colour filter sizes for ellipsoidal spotlights, Par units, MR16's and more. They may also be ordered in custom sizes.

Australian distributor: Miller Professional Products (02) 9439 6377.

new lighting company

XYZ LIGHTING

Chameleon Touring Systems, one of the major players in the entertainment lighting rental and production industry, have set up a new company called XYZ Lighting, which will house possibly the largest inventory of moving lights in Australia, if not the Southern Hemisphere.

On many occasions, local and international touring acts and productions have been hampered by a limited supply of moving lights. This problem has been solved through XYZ Lighting. Now large quantities of moving lights will be available to the professional rental market - initial inventory of moving lights at XYZ will be over 200.

XYZ Lighting is based at 2 Huntley Street, Alexandria, Sydney, with premises covering over 2500m². Some of the new products which will be made available include Martin's new MAC 600 and 500.

Tony Davies comments, "the benefits are that smaller companies who would not normally be able to access large quantities of moving lights instantly become operators of large shows with the latest technology."

XYZ Lighting began operation on Monday 22nd September, and if you would like more information, please contact Tony Davies at XYZ on (02) 9310 5222.

NEW PRODUCTS FROM MARTIN

As well as the MAC 500, Martin launched several new products at PLASA including the **Magnum 1000 Smoke Machine**, a very small but highly developed smoke machine with built-in overheating protection, programmable output, and manual control via a remote handset. The **MAC Dome** is a protective housing for the MAC range allowing them to be used outdoors in a protected environment. It comes in two versions, the larger designed to house the MAC 1200 and the smaller takes the MAC 500 and 600 units.

The **Martin Black Box** (MPBB 1 - Multi-Purpose Black Box - Fixture Uploader) ensures that your stocks of MAC 600's and 500's are always in the latest configuration. New upgrade software for these fixtures can



now be downloaded via the Internet into the memory of the MPBB 1 using a Windows95 based PC. Then via the serial link, the MPBB 1 can upload the new software to each MAC 500 and 600.

The new **Martin**

2518 Controller is a dedicated DMX-controller for smaller applications. The layout is made so any fixture using up to 6 DMX channels can be controlled easily, but in general any DMX fixture can be controlled.

Also on show were new versions of several products. The **MAC 600E** is a studio version of the MAC 600 with an electronic ballast giving flicker-free, near silent operation. The **Roboscan 812** now has a 150W metal halide 2000-hour lamp, the **RoboColor III** a 150W lamp, and the effects **Punisher** and **Destroyer** now have a 300 hour 250W lamp. Imagescan, Case Controller, Wheeler and Starfish have also been upgraded.

Australian Distributor: Show Technology (02) 9898 1111.

THE LATEST LIGHTING TOOL FROM SELECON

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THE COMPLETE SELECON RANGE

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- Try them in the test lab
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Herkes Pro Lighting
Ph 02 9319 3133, Fax 9319 0204

VICTORIA

Clearlight - Ph 03 955 31688, Fax 955 34401
CLS - Ph 03 964 68444, Fax 964 68555
Three Arts - Ph 03 981 80397, Fax 981 91851

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Stagecraft - Ph 09 227 9000, Fax 328 7373
Stage & Studio - Ph 08 9227 9932, Fax 9227 9347

SOUTH AUSTRALIA

Osmond Electronics - Ph 08 8410 1111, Fax 8410 3322
GUVT - Ph 08 8340 1999, Fax 8340 1980

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Sound Advice - Ph 06 280 8777, Fax 280 8177

or contact Selecon - Fax 64 9 3601719

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SELECON

COMPULITE

After the recent launch of the Spark and Photon compact lighting consoles, Compulite have launched Ovation 4D which allows you to control up to 2048 DMX channels. These channels can be flexibly assigned to control 1536 dimming channels (including scrollers) and 250 moving lights or other DMX controlled devices. The playback devices include 2 dipless split crossfaders, 20 faders, and 16 controllers/chasers. Other functions include multi-layer patching, 999 macros, automatically triggered complex playback events and more than 1000 memories.

Also new is the Micron 4D, a smaller lighting console.

Australian Distributor: Coemar De Sisti (03) 9467 8666.

Spark



PLASA BITS

● MAD Lighting launched their plastic cased version of the MAD Colour Range. *TechScope (07) 3358 5118.*

● NJD released four brand new lighting effects - Psycho Auto Scanner, Chaos Auto Moon, RAP100 Rotary Advertising Projector and the RAP250 Rotary Advertising Projector. They also launched their new Xenon 25 strobe. *Black Express Light and Sound (02) 9559 4363.*

● Starlite launched Stardraw Professional, the latest programme in its Stardraw CAD software series. *Coemar De Sisti (03) 9467 8666.*

● Jands Electronics had the European launch of their 72-channel touring DMX dimmer rack system. *Jands (02) 9582 0909.*

● Elektralite launched the CP-5P preprogrammed controller with shows ready to run for selected fixture types. Up to 16 fixtures can be controlled. *Show Technology (02) 9898 1111.*

● TAS launched two new moving yoke fixtures - CF6 and KP6. *Coemar De Sisti (03) 9467 8666.*

● The Smoke Factory launched two new smoke machines - DATA and Enterprise TC3. *LSC Electronics (03) 9561 5255.*

● FAL launched the FAL 2500 XL which incorporates a new mirror system. *ELSTA (02) 9568 2100.*

● Constella had two new lighting effects - the Maelstrom and the Helix as well as a new full DMX intelligent scanner called the Astrascan. *Show Structures (09) 8470 4707.*

new releases PLASA

ETC

ETC Europe released three new products - the Obsession II, the CE Source Four jr and CE Source Four jr Zoom. The Obsession II has been developed to combine control of both moving lights and traditional theatre fixtures in a console which offers more power and speed of operation. The CE Source Four jr comes in three fixed beam angle ellipsoidals and new Zoom. At 575W it is bright, has efficient optics, better imaging and beam quality.

Australian Distributor: Jands Electronics (02) 9582 0909.



LITESTRUCTURES

LiteStructures launched 'Shoplite' an aluminium trussing system with integrated mains circuit designed specifically with the retail display market in mind. The mains track carries the power for lighting other equipment to wherever it is required safely and easily. The Shoplite system is versatile, quick to install, cost-effective and an important addition to the LiteStructures range of products, allowing a multitude of different lighting applications to be exploited both quickly and easily. *Australian Distributor: LSC Electronics (03) 9561 5255.*

TECHNOBEAM



We brought you the story last month now, as promised, here's a picture of High End System's latest: luminaire - the Technobeam
Australian Distributor: Tech-Scope (07) 3358 5118

TV OVERLOCKER

Doughty introduced the Television Overlocker after becoming convinced that there was a requirement for a studio clamp that provided a firm fixing for HMI's, cyc lights etc. but could be quickly mounted into position. The TV Overlocker is a quick release clamp with an over centre locking action. This type of locking movement provides compression clamping thus preventing damage to thin walled tubes. There is also a secondary spring loaded safety system



that stops the clamp from opening unexpectedly. The TV Overlocker accepts a 29mm spigot and is supplied complete with a captive safety lynch pin.

Australian Distributor: Coemar De Sisti (03) 9467 8666.

USHIO

Ushio introduced their new 1500 hour long life high performance lamp (HPL). Working in conjunction with ETC's research and development department, Ushio's engineers have developed the 230v and 240v long life HPL, which has a colour temperature of 3050K. This six-segment filament HPL, when combined with the Source Four fixture, gives a similar performance with less heat and a 45% energy saving when compared with common 100W reflector types.

GRIVEN

Griven have also launched a projector for the promotional and display market called the Mover. The Mover can take 35mm slides, metal or dichroic gobos and can accept four of these, making it possible to project, scan and rotate any picture, image, company logo, brand name etc.

Griven also launched the Jump and the Colorway. The Jump, available in HMI 575 or HMI 1200 versions, has a combination of motorised dichroic glass reflectors and clear mirrors, with 8 pre-programmed sequences which can be individually accessed.

The Colorway is a DMX-controlled full spectrum CYM colour changer aimed at the live performance market, with halogen and discharge lamp versions offering different facilities.

Australian Distributor: Black Express (02) 9559 4363.



sydney's new water world

TANK

a subterranean artwork using K2 projectors

Beneath the city's surface a network of tunnels connect people, railways, energy and telecommunication cables and water supplies. For most, the relentless movement that passes through them is hidden from view, that is until you take a step below to enter the subterranean world of Sydney's underground.

In the Downing Centre (once the old Mark Foy's department store) an historic tunnel linking Museum Station has opened to the public. The Attorney General's Department, which is housed in the Downing Centre, commissioned artists Jennifer Turpin and Michaelie Crawford (via architects Peddle, Thorp & Walker) to create an artwork to liven up the restored tunnel.

"We were required to work within the fabric of the building particularly the glass display units (left over from when the building was a department store)," said

Jenny. "Part of the brief was to work with light so Michaelie and I developed concepts from what the site was telling us."

Historical research by the team revealed that the theme of water and tunnels was strong in the area. The site is very close to Sydney's original tank stream water supply which is now an underground water course. In nearby Hyde Park there was a historic system of water piping called Busby's Bore. When work started on this particular tunnel there was a problem with water seepage and the artists began to feel that they were being drawn towards the theme of subterranean water.

Along one side of the tunnel there are 13 glass panels, formerly the display windows. The panels are grouped in pairs making an overall size of 3 metres high by 4 metres wide. The entire installation stretches 40 metres. The glass is laminated, 12 mm safety glass especially coated to deal with the projection of the image on the back. Behind the panels are a total of 34 Optikinetics K2 projectors purchased from Lightmoves.

Opposite the main display are some smaller glass panels incorporating text from actual legal documents pertaining to water flowing through subterranean strata. The cabinets obviously relate to the present function of the building, that of a law court.

In the past, the artists had used light before but only to light water never to create the illusion of water. They spent

several months experimenting with different techniques of reflecting and bouncing light before discovering Lightmoves Technologies who they credit with much help.

"We knew from the beginning that we had to donate two or three projectors for a couple of months for them to experiment with as we could not make the equipment suitable for this application," said Paul Owen of Lightmoves. "After simply showing Jenny the effect, there was an enormous amount of work that had to go into how you bounce the light, how you spread the light across such a size, how many projectors you'll need, what the focal length of the lens should be etc. It was all reasonably scientific work."

"We had a few of Paul's lights on permanent loan whilst we built a prototype of one of the windows in our studio," added Jenny.

The 34 K2's have a combination of distortion glass to create the water effect. The K2's are powered on every morning at 6 am and run until 8.30 pm. The lamps used are MSD 2000 hour display lamps, which cost \$200 ex tax, to cut down on lamp exchange. The first K2 used for the display has an hour meter on it so when it reads 1950 hours the clients are advised it's time to change all the lamps. After 2000 hours the lamps do have a tendency to explode. An extraction system behind the display keeps the air circulating although the projectors themselves run very cool.

"Nothing runs cooler than the K2, none

Jennifer Turpin and Paul Owen



of the image projecting projectors can run as cool," insisted Paul. "Jenny had to use a very technical combination of lenses and because the K2 takes the 50 mm SAV lens barrel, all the lenses that are commonly associated with slide projectors are suitable to fit into the unit so they don't have four optics. It's a condenser projector as well and having primary and secondary condensing as well as a fantastic lens gives just about the flattest field you'll see from any projector. It's entirely suitable for the application."

The artists want to keep the way the effect a secret but it does involve bouncing light from the K2's, at an angle, off a mirror onto the back of the window.

"Projecting at this distance with a 2 metre focal length obviously requires an extremely wide and special lens being selected," said Paul.

"Michaelie and I spent a lot of time researching the physics," Jenny added. "We had a lot of assistance from various scientists. It's a simple solution but it took a long time to arrive at."

Jenny and Michaelie also designed quite an ingenious rigging system with a substantial, swinging boom arm to move the K2's for maintenance.

The tunnel has to have a level of light deemed safe by the State Rail Authorities, a level which Paul believes is far too high and consequently effects the artwork. A centre strip of fluorescent light has some baffling running down the side to try augment the effect.

The resulting artwork is a fluid, atmospheric water world which keeps pace with the flow of passersby on their way to and from the station. The image is quite fascinating, the closer you get to it the more abstract it becomes.

"You don't quite know what you're looking at - is it the surface of water or is it depth?" said Jenny. "It's a fluid, amorphous image."

● **Cat Forcer**

IALD may create a local division

The International Association of Lighting Designers will host an event for members and all others interested in lighting design on Wednesday 29th October at the Carlton Crest Hotel in Melbourne immediately following the IESANZ International Lighting Convention and Trade Exhibition. All are invited to attend the IES Convention (cost IES members \$495, non members \$525) as well as the post conference discussion regarding the IALD (no charge).

If there is sufficient interest from local designers, the IALD will create a division of the body to represent the SE Asian market. Currently the headquarters is based in New York and the association has a division in Europe.

The last session of the IESANZ conference (cost for the day is \$275) will feature presentations by current Vice President, Barry Hannaford, IALD, of the UK and Melbourne member David Bird, IALD. Barry will provide a review of the 1997 IALD Lighting Design Awards, focusing on projects from around the world, while David will focus on the lighting of the Crown Entertainment Complex.

Following the conference a meeting will be held of all those interested to discuss plans to organise an IALD Division in Australia/South East Asia as well the intentions of the IALD for regular gatherings of the regional lighting design profession. Morag Fullilove of the USA, who recently joined the Association as Executive Director will lead the discussion. A question and answer period will give all present an opportunity to learn more about the IALD's current activities and plans for 1998-1999.

For further info contact David Bird ph: (03) 9613 9222, fax: (03) 9629 3929, Email: dm.bird@visiondesign.com.au

LXbizzBITS

NEWS

ALE AND CHAMELEON

Chameleon Touring Systems have just added five 4.2M diameter 14 inch box truss circles to their inventory. The circles manufactured by Advanced Lighting Equipment, part of the Chameleon Group of Companies, had their first outing on the Dairy Farmers Franchise Launch at the Sydney Convention & Exhibition Centre.

LD and Production Manager for the event Alan Store said, "The circles were great, allowing me to mount 8 Clay Paky Stage Scans on each with Martin Mac 600 wash lights to play on the 'faced in' projection screen surfaces".

Projection screens are available for use with these truss circles.

CELCO VENTURA TRAINING

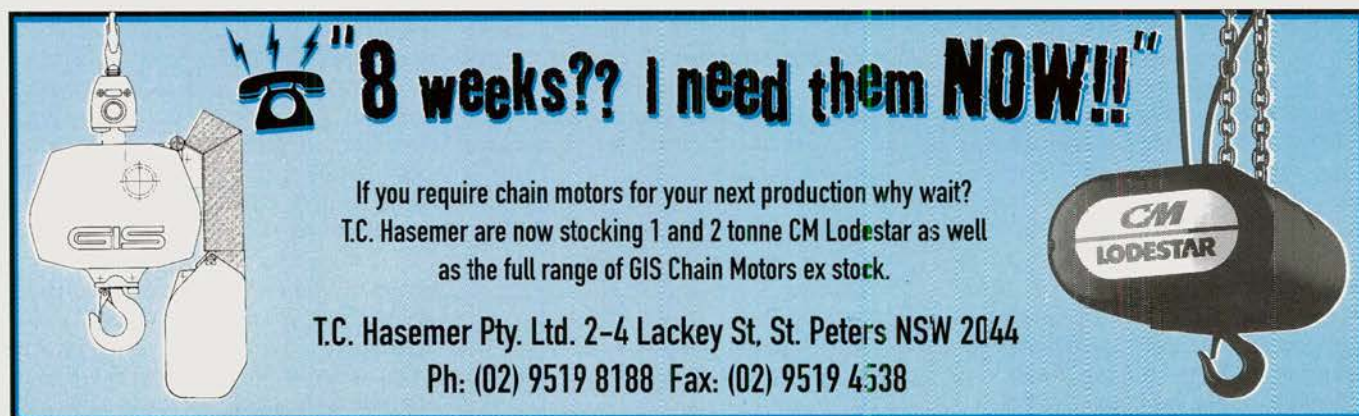
Celco & Electrosonic Pty invite all genuine users/prospective users of their Ventura lighting control desks along to training sessions run by Pete Sarson (ex LD for Shed Seven, Rory Gallagher, Hootie & the Blowfish and more). Sessions will be run in Brisbane, Melbourne and Sydney between October 13 - 17. Further details from Nick Chatham at Electrosonic Pty, Sydney (02) 9714 0400.

SELECON INTERACTIVE CATALOGUE

A Selecon Interactive product catalogue is now available. This includes details and specifications on their entire product range as well as a virtual theatre in which many of the products can be tested. Anyone wanting further information contact your Selecon distributor or Selecon at fax: 64 9 3601719 or Email selecon@selecon.co.nz.

GEARHOUSE GO SHAKESPEARE

Gearhouse Lighting have ordered 24 x Altman Shakespeare 15-35 zoom profiles to add to their ever expanding rental inventory. In addition to these fixtures Gearhouse have ordered par bars, chrome stands, H-stands, hooks and the new 6.1M lifters from Chameleon Pro Lighting Sales.



"8 weeks?? I need them NOW!!"

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Cables are just there. Sure they're the arteries through which current flows to run our equipment and usually you need two more of them than you actually have, but most of the time they're just there and you use them. Well, it's time we gave cables a bit more attention and acknowledged how important it is to get the right cable for the job. Since the change in the electrical regulations governing the sale and use of piggy-back plugs¹, most of us, even those with appropriate electrical licences, don't even make our own cables anymore: they're just a commodity item purchased by the

section of most public libraries and available for sale from government and technical booksellers⁴.

Current Carrying Capacities of Flexible Cords

Nominal Area of conductor in square mm	1.0	1.5	2.5	4.0
Current carrying capacity in Amps	10	15	20	25

These ratings are only valid for a fairly tightly defined set of conditions. For example the cable must not exceed 60°C in

This means that a 10 Amp cable when wound three layers deep on a drum can only safely handle $10 \times 0.47 = 4.7$ Amps or to view it another way: to run a 2kW load on a cable wrapped two layers deep on a drum we must use 15 Amp cable ($15 \times 0.58 = 8.7$ Amps). What this table really means is that when we are disposing of the excess cable in a rig we should take great care to avoid leaving it rolled on drums or in bunched up in tight clumps.

What your mother never told you about

CABLES

by Andy Ciddor

carton. Cables are so significant that Murphy's law has a corollary dedicated to them: "Any cable will be either 150 mm too short or ten metres too long for its intended job." (This is the metric translation of the original which was, of course, expressed in cubits².) So let's examine what we need to understand about cables in order to use them wisely and safely.

The amount of current which can safely flow through a cable is determined by a number of factors including the cross-sectional area of the conductors in the cable and the types of material used as conductors and insulation. Most of the cables we use for production are required to bend and coil and generally be quite flexible and to achieve this are usually constructed of multiple fine strands of copper wire insulated with either a flexible polymer such as PVC (Polyvinyl Chloride) or a type of rubber (Silicone or natural). The current ratings for standard flexible cables are available from tables in the Australian electrical industry's regulatory bible: *Australian Standard 3000 - Wiring Rules*³ (AS 3000) which is in the reference

temperature and the ambient air may not exceed 25°C, conditions which are constantly exceeded in your average lighting rig. How then can we know the maximum safe current for a cable run in less than ideal conditions? The process of adjustment is known as **derating** and fortunately there are tables in AS 3000 which enable us to make the calculations. There are two sets of conditions for which AS 3000 provides derating tables, both of them related to circumstances when a cable is not in free-flowing cooling air.

The other condition for which AS 3000 provides derating information is where there are two or more circuits grouped together. Grouped circuits means either individual cables loomed together, circuits in the same multicore or multiple cables run in the same conduit or duct, all of which apply to everyday productions.

Derating factors for groups of more than one circuit of single or multicore cables enclosed in conduit or troughing or bunched in air

Number of circuits	2	3	4	5	6	7	8	9	10	12	14	20
Derating factor	0.80	0.70	0.65	0.60	0.57	0.54	0.52	0.50	0.48	0.45	0.43	0.38

When a cable is longer than required (as predicted by Murphy's Law) and either coiled up or rolled on a drum to keep the rig tidy, there is a derating factor based on the number of layers in the coil or drum. The normal current carrying capacity of the cable is multiplied by the derating factor to get the safe current for those conditions.

Derating factors for cables in coils or wound on a drum

Number of layers	1	2	3	4
Derating factor	0.76	0.58	0.47	0.40

The implication of this is: that to safely run a pair of 1kW parcans (8 Amps) on each circuit of a six-way multicore, each core needs to be 1.5 sqmm ($15 \times 0.57 = 8.6$ Amps) in cross-section. Hands up all those using 1.0 sqmm multicores which are only safely rated at 5.7 Amps per circuit. Before rushing out to replace all of your multicore cables, take note of the fact that the derating factors are given for the number of **active** circuits in a group. If you are feeding the circuits on a chase effect, for instance, it could well be that there are only three of your six circuits active at any one time thereby giving you a derating factor of 0.70 rather

Current Carrying Capacities of Flexible Cords

Nominal Area of conductor in square mm	1.0	1.5	2.5	4.0
Voltage drop in milliVolts per Amp per metre	47	32	18	13

than 0.57. On the other hand, if the multicore is feeding a four colour wash system, then there is no guarantee of the load being less than full on any circuit.

How long is a cable? When it's cables we're discussing, length really does matter, as the resistance of a cable is affected by both the cross-sectional area of the cable and its length. Put more politely, the longer a cable run the more voltage that is lost in the cable. AS 3000 gives us a useful table:

What this means to us is that if we wish to run a 10 Amp load at the end of a 50 metre cable run, we lose 23.5V if we use 1.0 sqmm cable ($0.047 \times 10 \times 50 = 23.5V$), 16 Volts with a 1.5 sqmm cable or only 9 Volts if we lash out and buy 2.5 sqmm cable. It's a point to ponder for those of us in the film and television industries as to exactly what colour temperature we are getting at the end of those long cable runs out on location.

A related matter to consider when looking at cable safety is whether the insulation on our cables is appropriate to the voltages at which they are being operated. All cables for use in Australia's 415/240 Volt system are required to be insulated to 600 Volts to deal with the peak voltages (remember 415 Volts is only the RMS or average value), whereas cables for use in North America's 120/210 Volt system are only required to be insulated to 400 Volts. Check the rated voltage stamped into the insulation of any cables in your rig which may have come from a 120 Volt environment, especially luminaire tails and multicore looms.

My mother never told me (or my brothers) anything very much about cables, except perhaps to say "stay out of the entertainment industry and get a proper job", but I'm really glad my parents gave me a

copy of *SEC Wiring Regulations 1961-67* for my seventeenth birthday rather than those purple flares.

1 In a surprisingly wide range of circumstances it is still quite possible and legal to make your own cables terminating in piggy-back plugs. Perhaps this should be subject of an article in its own right.

2 The cubit is a biblical measure of length, being the distance between the point of one's elbow and the outstretched tip of one's longest finger. The specs for Noah's ark were given in cubits. And, no, you can't buy scale rules in cubits since Australia went metric.

3 The source for all tables in this article is AS 3000.

4 The softback edition is available from your local branch of Standards Australia for \$54. Look them up in your phone book or on the World Wide Web at URL <<http://www.standards.com.au>>.

5 No. It's a town on the Murray River. (Don't write to Julius about this one. I don't think he gets it either.)

FESTIVAL OF THE DREAMING

The Opening Ceremony for Sydney's Festival of the Dreaming was held on the Sydney Opera House Forecourt. The client was SOCOG, the lighting director was Joseph Mercurio of Bangarra Dance Theatre, Chameleon systems engineer was Martin Rutter and the equipment was supplied by Chameleon.

Gear included:

16 x Clay Paky Stage Scans
16 x Martin MAC 600
6 x De Sisti 5kw fresnels
96 x Par 64
2 x MA Scancommand

Chameleon Crew Note - best smoke effect we've ever seen, several bales of green gum leaves set afire, up wind of the performance area. The Sydney Morning Herald reported the next morning that people were leaving in droves due to stinging eyes and crying children!

LXbizzBITS

NEWS

CLAY PAKY BUSY

The new MiniScan HPE has been in great demand by hire companies around Australia, Peter McKenzie of Show Lighting Australia said. Hire departments that have MiniScans available now include Avsound and Electric Sunshine in Sydney, Entertainment Warehouse in Melbourne and Ben FX in Adelaide.

More Stage Scans have been added to Chameleon's inventory in Sydney as well as ELS in Burleigh Heads. Electric Sunshine have added more Shadow Follow Spots and Combicolour 300's. Custom Audio in Newcastle have added two new VIP 300 DIA Positiva's to their corporate rental inventory. Entertainment Installations have added a DMX Shadow follow spot to their hire list.

Nightclub installations have already included the new O2 Nightclub in Perth, Metro in Melbourne and Bar Cleveland in Sydney.

CHAMELEON AND LES MIS

Chameleon Tauring Systems have been awarded the contract to supply lighting equipment for the forthcoming Cameron Macintosh touring production of Les Miserables. Equipment will include Altman Shakespeare ellipsoidals, High End Systems Stage Scans, Strand 520 consoles, Reich and Vogel beam lights custom adapted to Strand PALs yokes.

SKYPAK GROW

Queensland based Skypak Lighting and Production Services have added the following to their hire department: a JEM Hydrosonic 2000 Haze Generator; another four MAC 600's to add to their stock of four; four PRO 2000 Foggers with DMX interface and 2532 interface for 3032 and 2510 controllers; and an Imagescan with a hand held controller.

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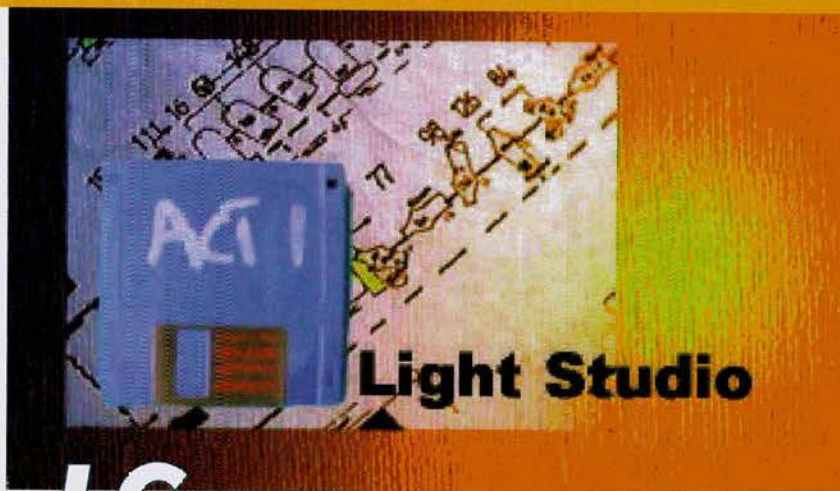
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WYSIWYG is a term that we have all come to know since the revolution of user friendly computers such as Macintosh or PC's running Windows. Simply, it stands for 'What You See Is What You Get' where the screen accurately simulates features of actual documents such as fonts, styles and graphics. With the advancement of computer



Seeing IS Believing

Programming with WYSIWYG

aided design in lighting, one company has recognised the potential of marrying the two ideas of CAD and WYSIWYG to create a 3D software package capable of simulating advanced lighting effects without hanging a single lamp.

Called WYSIWYG, the software is created by UK company CAST Lighting and Flying Pig Systems as an entire lighting design package. Requiring only a PC, a hardware card, a monitor and a lighting console, the software has an extensive library of automated lighting and effects from which entire shows can be built and then simulated in real time. Described as 'Lighting Visualisation Software', the program is able to simulate movement, colour, intensity and beam pattern of the most advanced automated lights, to the most simple of conventional luminaires.

THE PROGRAM

The WYSIWYG program is made up of two sections - firstly the CAD software which is used to construct the performance area including all set pieces - static and automated. Once the environment has been created the lighting design is layered over the top so that lamps and effects are rigged in the virtual space. After effects and cues are programmed into the console, a three dimensional real time simulation of the show can be viewed.

Lighting features able to be simulated include: angular movement (moving head and scanners), colours (gels and faders),

gobos including rotation and indexing, gobo and colour changers such as wheels and scrollers, lenses, focus, zoom, strobe (shutter), barn doors, iris, smoke/fog levels, and colour temperature.

Even moving trusses and automated staging can be simulated through the console by assigning DMX channels to moving set pieces.

And with the ability to view the environment from any angle in real time, set designers and lighting designers alike can gain a much better understanding of the

"Having a lighting desk is for picking up girls, not doing lighting!"

space they are working in, and can use these perspective views to pre-empt problems in staging or lighting the space.

LIGHT STUDIO - WYSIWYG AT WORK

Light Studio is the only company of its type in Australia or America to operate as a full time WYSIWYG studio. Run by experienced programmers Sam Hopkins and Hamish Inglis, the St Kilda based studio is a virtual laboratory in which lighting effects can be trialed on the big screen.

Having spent thousands of hours programming shows under impossible deadlines, Sam and Hamish recognised the benefits of a system that would allow them to program entire shows in advance in the

comfort and calm of a properly set up studio. Sam explains, 'We know what it's like to walk into a theatre completely cold, and you've got all this money invested in all the latest wizz bang lighting gear, and there is just never enough time to make it all work properly. We want more time to prepare ourselves to go in and do the big shows, to get the results, because the results take a lot of time to make happen.'

Sam and Hamish programmed the Atrium light show at Melbourne's new Crown Casino. It was during the hundreds of hours of programming for the Atrium that they realised WYSIWYG was the way of the future for complex lighting productions, including permanent installations.

"Once the casino was opened it was open 24 hours a day so we couldn't actually get in there to program the lighting. We began looking at ways to do future shows for the Atrium and realised that the programming would need to be done in a studio. Just recently, as in the last six months, the technology has got to a point where the computers are fast enough to cope with large scale shows in the 3D Real Time WYSIWYG environment. So it has become viable for us."

With only four copies of WYSIWYG in the country the guys realised that the market was open, so Light Studio was born.

Sam explains the set up of the studio: "We're using a 200 Meg Pentium to run the card, and a Jands Hog 600. It's a desk I've come to know really well after using

continued over

INTRODUCTORY OFFER*

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Duo Colour

After the amazing success of the Colour Changer CED, Abstract has created a logical addition - the Duo Colour.

Designed with the mobile DJ, touring band and small venue in mind, the Duo Colour weighs a mere 9.5 kilos and comes ready installed on a "top hat" compatible T-bar for rapid installation and mounting.

The Duo Colour consists of two heads, each of which has seven colours

combined with seven gobos (available in touring version without the gobos), projected through a high quality optical system and resulting in extremely bright beams.

Each Duo Colour is individually addressable via full DMX 512, whilst both heads are pre-wired within the T-bar assembly requiring just one single 240V connection.

Write in Reader Service Number: 103

Duo Colour Specifications

Lamp Type:	12V 100 Watt A1/231
Motorised Colours:	White + 7 Dichroic Colours + Multi-colour
Motorised Gobos:	7 Gobo Patterns + Open (none in touring version)
Dimensions:	(LxWxH)mm
Colour Changers:	200 x 130 x 160
T-bar:	410 x 65 x 30
Top Box With 10mm Eclit Head:	150 x 125 x 75

Duo Colour Features

- Variable speed strobing plus bi-colour strobing on each head
- 7 colours + multi-colour and white
- 7 gobos + open
- Compatible with all Abstract CE range
- DMX 512 controllable
- Heads integrated into T-bar mounting
- 12V 100W A1/231 dichroic lamp
- Twin optics and focus



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Seeing IS Believing

continued from previous page

the Whole Hog 2. Hamish and I both racked up about 500 hours on the Whole Hog 2 doing the Atrium. We use a multimedia video projector so it has a nice big picture and you can really see what's going on. And that's all there is to it - the computer with the card, the screen and monitor, and most importantly a nice couch.

"We wanted an environment that is comfortable and productive so that a Lighting Designer can come in, have a glass of red, sit on the couch in front of the fire, and see his design simulated in real time in front of him. The idea was that if we could do it with a big enough screen, so it was usable, it would be like sitting in front of a stage watching a lighting show.

"To see the benefits of it you probably have to be an LD. All the LD's I've spoken to think it's just fabulous. Hire

companies are keen to use it, but they're not keen to do it themselves."

Sam explained that while WYSIWYG is not photorealistic in the true sense of the word, it is detailed enough, especially with moving lights, to put down a cue structure and build a show to the point where it can be taken into a venue and rigged from. Then it's just a matter of adjusting

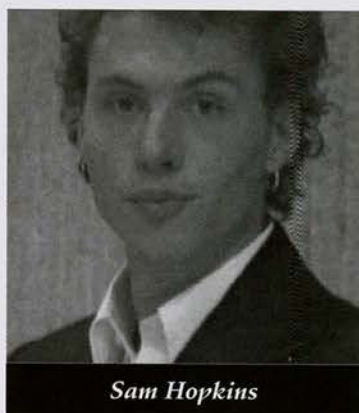
the pre-set focuses on the moving lights, and basically all the hard work has been done before you've even stepped foot in the venue.

While it is still impossible to have a perfect correlation between the screen simulation and the actual lighting show once it is rigged in the venue, Sam explains that it is just a matter of getting to know the allowances to make.

"An LD can build a picture in his head of what it should look like, so really you're building the nuts and bolts in the studio and you've got a very good idea of what your show looks like - you've got all the moves, the changes, all the timing sorted out, and the only thing you have to set up when you get there is your pre-set focuses to match the positions you've set up in your 3D space, and they can build an extremely accurate model, as long as it is rigged how it is on the screen."

Hamish says the video projector is key in enabling the most accurate results.

"Having the simulation on a projector makes an incredible difference because you're trying to visualise a big space in your head and what the effects are going



Sam Hopkins

to look like. Having it on a monitor it's quite difficult to keep that concept in your head, so when it's running with the projector it's much easier to think 'Right, that's my stage, that's how it's going to look'.

That visualisation and bonding together of what you're creating in a simulated space and what you're really going to be able to create are much closer."

Paperwork for the operator can be generated from the program according to the created environment so that lighting plans and patches can be printed out, and even showdisks for a pre-patched console can be created.

Hamish says one of the best features of the system is that the lighting board and the WYSIWYG can work in a bilateral way. So an LD can sit at the computer and drag across a selection of lights with the mouse and those lights will be selected on the console. And focus positions can be selected with the mouse so that all the moving lights will focus on one designated point in 3D space.

AN ON-LINE BUSINESS

Being such a compact set up, the guys are able to travel anywhere with their gear to do WYSIWYG programming on location

"...that's all there is to it - the computer with the card, the screen and monitor, and most importantly a nice couch."

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Seeing IS Believing

if required. The majority of their work however is either from local companies, or through companies with access to the internet, wherever they are. Sam explains the process.

"Basically, you can send me a DXF (3D) file over the internet from anywhere, and from that I can build your stage and scenery. I can then take a lighting design, either from a piece of paper, or a computer file or whatever, and basically rig it in the 3D space. Then I hook up the console of your choice, patch the console - the program does it for you, and then program the show. From that I can render screen shots of each scene, and I can put in moving scenery. And I can do it from anywhere in the world so hopefully we can take on some international work. The possibilities are endless."

Sam believes WYSIWYG is the way of the future. Too often he has seen productions that have fallen down because of lack of programming time.

"Because you only have a few hours to program, an LD or an operator will skip over a complex effect they want to create because of time and money. Whereas in the studio, we can actually play with it for a while, and because it's in real time I can see the gobos and the beams of light. I can play with ideas and build them up in a time when it's only really costing me and the console."

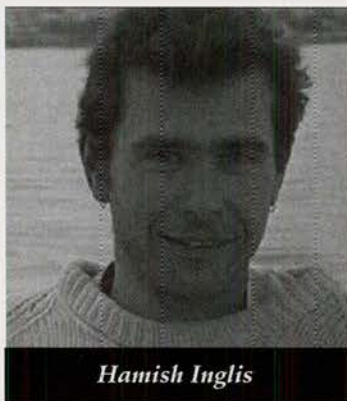
"It's so much easier for the LD to come in and sit around and we can workshop it at a much cheaper price than having lamps running and the venue. It cuts the pre-production costs enormously. For any production company or LD, if they can save that set up cost, then they can have more lights. We can do it for a tenth of what they'd normally spend."

One of the most successful applications for WYSIWYG has been the preprogramming of concert shows for tour. Current shows include U2, Metallica, David Bowie, Kiss and Oasis. And WYSIWYG is ideal for one off shows or productions with minimal bump in time.

Hamish says that working with the WYSIWYG system has pointed out the need for a new generation of consoles that can handle large numbers of moving lights.

"Lighting desks of today don't do what they should do. There are major flaws in the way they deal with moving lights. A console will be running straight off a computer within the next two or three years. In fact the idea of having a console - you don't really need it. It's really just a numeric keypad to a large extent. Having a lighting desk is for picking up girls, not doing lighting!"

● Mandy Jones

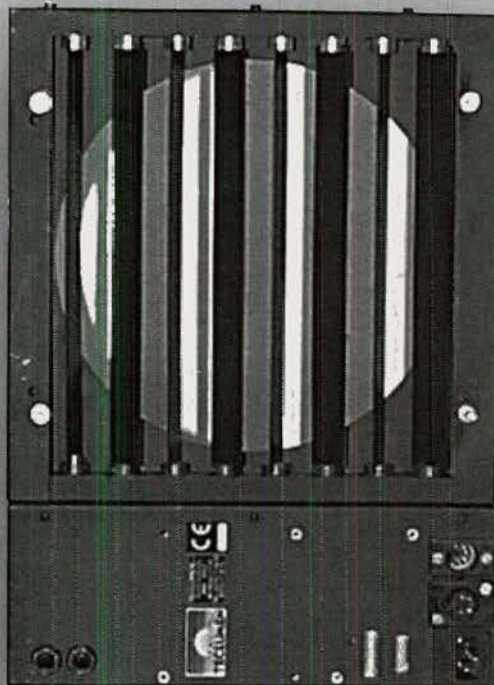


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Write in Reader Service Number: 109

HIGH END SYSTEM'S CYBERLIGHT

By Jaqueline Molloy



When Tim Bradsmith from *Concert & Corporate Productions* in Perth, first saw the Cyberlight in action it was being used to light the ice during a *Torville and Dean* tour of Australia. Bradsmith believes it was the first time that Cyberlights had been seen in Australia and he was very impressed: "The custom gobos were rotating over the ice and it looked amazing and I thought 'I've gotta have some of those'.

THE SEARCH

It was to be a couple of years before Bradsmith was in a position to seriously go shopping for a heavy duty automated light. "I looked at the *Clay Paky* range which I think are an excellent unit but the reason I didn't go for them was because they felt like more of a night club light, just because of their feel. The Cyberlight is just so gutsy in terms of output". Price was not the major consideration for Bradsmith when looking for robotics but he was pleased to get an excellent deal on the four second hand Cyberlights he ended up purchasing.

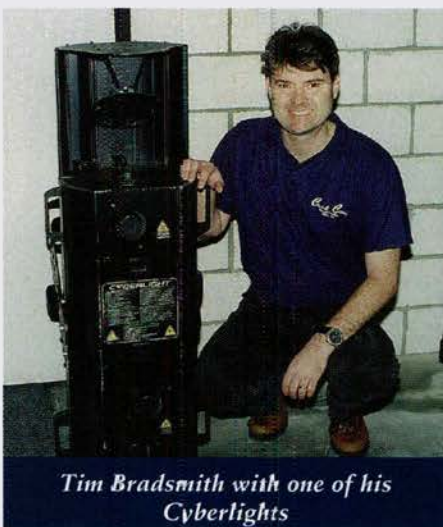
"I first spoke to Noel Bourne from *Greater Union Village Technology* (now *TechScape*) who distribute Cyberlights and he put me on to John McKissock from *Clearlight Shows* in Melbourne who happened to have four that he was selling. After many conversations with John he gave me a great deal and I bought them sight unseen. I asked John to deliver them to *Jana's Concert Productions* in Sydney and they were out on tour the next day." Bradsmith estimates that his Cyberlights work for him about eighty days of the year in a variety of situations.

APPLICATIONS

"We have a lot of corporate clients that we do product launches etc for, therefore we provide a lot of custom gobos. There's a local guy here in Perth who can make me a custom designed gobo within 24 hours, I fax him the design and it's ready the next day".

Bradsmith believes the virtually unlimited colour choice the Cyberlight provides is unparalleled. "For our corporate clients we can achieve the company colours by utilizing the dichroic facility and the colour mix system. We can get some great looks by having the logo both in a fixed and rotating gobo and then project the company colour over the top".

C&C Productions also do a fair amount of rock n roll work and this tends to work the Cyberlights much harder than in a corporate or theatrical situation; but so far Bradsmith has been very impressed with their performance. "We toured the Cyberlights with *The Divinyls* and did 37 shows in 43 days. The lights were constantly in and out of their cases and trucked around the country and



Tim Bradsmith with one of his Cyberlights

not once did we have a problem with them".

COLOUR & EFFECTS

The Cyberlight provides a colour system that Bradsmith says you could sit and experiment with around the clock and still be finding new colour combinations. There is a dichroic wheel containing richly saturated colours plus a subtractive colour mixing system (magenta, yellow and cyan). The Cyberlight's third colour system uses three colour correctors to modify colours selected with the dichroic or subtractive colour mixing system. There are seven fixed gobos plus open white and four interchangeable variable speed rotating gobos that work in a relatively simple spring system for loading. There are also prism, mosaic, strobe, and wave glass aqueous effects.

CONTROL

The Cyberlights require 20 channels of DMX512 per unit to allow for: pan, tilt, colour, colour mix (3 channels), fixed gobo, rotating gobo, rotation speed, zoom, iris, focus, effects, strobe, dimmer, motor and control. There is a dedicated controller available for the Cyberlight but Bradsmith started out running them on a *Jands Event 60/120* and has tried the *Scan-Commander (MA Lighting Technology GMBH)*, *Whole Hog (Flying Pig)* and a *Jands Hog 250*; which is his preferred board for this application. "If I purchased more Cyberlights I would definitely consider a dedicated controller but so far I've been happy with the way they've performed using all of the desks, but particularly with the Hog 250".

PROGRAMMING

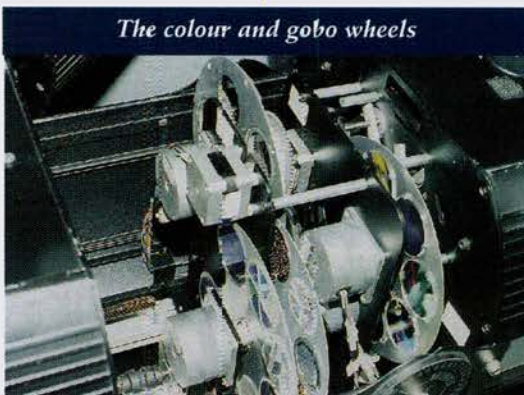
Bradsmith found that initially the Cyberlights were more complicated to program than the robotics he'd used before but not through any design problem with the unit. "Because they offer so many facilities it just takes a while to get used to programming for so many functions".

FAN NOISE/COOLING

The day I visited *C&C Productions* the Cyberlights were running through their start up and test sequences and I was impressed with how quiet they were. I asked Bradsmith how they performed in terms of air flow and heat dispersion: "They have excellent fan flow and they stay relatively cool. I would say the amount of heat that comes out of the back of them would be equivalent to a hairdryer on low".

LAMP

The Cyberlight uses a 1200 watt MSR
continued over



The colour and gobo wheels

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PROFESSIONAL SHOW LIGHTING

last months BUYER'S GUIDE

Due to various reasons, the following were omitted from last months Buyer's Guide

Prices are excluding sales tax, which seems to be a lighting industry practice!

STAGE FRESNEL SPOTS

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3" Fresnel a compact 3 inch fresnel rated at 250w. Accessories include Profile snoot, barndoors and clamp. Ideal for display applications. \$119.

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Corto Wattage: 300/500W G. Beam spread: 8 deg. to 50 deg. Size(mm): (LWH) 290 x 290 x 307 approx. Working Distance: 3m -10m. Options include: Barndoors, Colour Frame, Safety Wire Guard, Motorised Colour Wheel. \$226.

Solar Wattage: 300/500/650W or 650W/1K. Beam spread: 9 deg. to 40 deg. Typical. Size(mm): (LWH) 295 x 223 x 175 approx. Working Distance: 3m -15m. Options include: Barndoors, Colour Frame, Safety Wire Guard, Motorised Colour Wheel. From \$265.

Passo Wattage: 650W/1K or 2K/2.5K. Beam spread: 5 deg. to 60 deg. Typical. Size(mm): (LWH) 435 x 290 x 240 approx. Working Distance: 5m - 25m. Options include: Barndoors, Colour Frame, Safety Wire Guard, Motorised Colour Wheel. From \$345.

DE SISTI

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Monet Wattage: 1K/1.2K G22. Beam spread: 7 deg. to 54 deg. Size(mm): (LWH) 290 x 290 x 307 approx. Working Distance: 3m -12m. Options include: 4 or 8 Leaf Barndoors, Colour Frame, Safety Wire Guard,

Scrims, Cones, Manual or Pole Yoke. From \$620.

Monet Wattage: 2K/2.5K G38. Beam spread: 8 deg. to 54 deg. Size(mm): (LWH) 360 x 410 x 426 approx. Working Distance: 4m -25m. Options include: 4 or 8 Leaf Barndoors, Colour Frame, Safety Wire Guard, Scrims, Cones, Manual or Pole Yoke. From \$950.

Leonardo Range of studio/stage fresnels ranging through 300W, 500W, 650W, 1K, 2K, 5K, & 10K. All luminaires in stainless steel, and including all standard accessories (barndoors, etc.) Piccolo units are also available (compact housings/reduced lens size). Available in Manual or Pole Operated. From \$586.

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Spot Wattage: 300/500W Beam spread: 8 deg. to 50 deg. Approx. Size(mm): (LWH) 225 x 204 x 150 approx. Working Distance: 3m -10m. Options include: Barndoors, Colour Frame, Safety Wire Guard. From \$236.

Spot Eco Wattage: 650W/1K/1.2K. Beam spread: 12 deg. to 52 deg. Typical. Size(mm): (LWH) 341 x 254 x 250 approx. Working Distance: 4m -15m. Options include: Barndoors, Colour Frame, Safety Wire Guard, Motorised Colour Wheel. From \$268.

Spot AL Wattage: 650W/1K/1.2K. Beam spread: 12 deg. to 52 deg. Typical. Size(mm): (LWH) 341 x 254 x 250 approx. Working Distance: 4m -15m. Options include: Barndoors, Colour Frame, Safety Wire Guard, Motorised Colour Wheel. \$380.

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FILM & TV FRESNEL SPOTS

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Monet Wattage: 1K/1.2K G22 or 2K/2.5K G38. Beam spread: 7 deg. to 54 deg. Size(mm): (LWH) 290 x 290 x 307 approx. (2K larger) Working Distance: 3m -25m. Options include: 4 or 8 Leaf Barndoors, Colour Frame, Safety Wire Guard, Scrims, Cones, Manual or Pole Yoke. Reduced price studio fixtures in folded sheet steel. From \$621.

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Leonardo Piccolo Range of compact housings and reduced lens size fresnels ranging through 2K, 5K, 10K, and 20K in Tungsten fixtures. Discharge units in both single ended and double ended lamps also available. All luminaires in stainless steel for strength/weight/durability considerations, and including all standard accessories (4 or 8 leaf barndoors, colour frames, etc.) Available in Manual or Pole Operated. From \$1400.

SINGLE FLOODS

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Ribalta 1 Work Light Compact sheet steel units c/w colour frame. Range through 300W to 500W. \$144.

Sequenza 1 Compact die cast and extrusion units c/w safety glass, colour frame. Options include barndoor and UV glass. Available in asymmetrical or symmetrical reflectors. Range through 500W to 1K & 1.25K. From \$316.

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CYBERLIGHT

continued from previous page

through 1K & 1.25K. From \$640.

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MULTI FLOODS

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COEMAR

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Ribalta 3 Work Light Compact sheet steel units c/w colour frame. Range through 300W to 500W. \$260.

Ribalta 6 Work Light Compact sheet steel units c/w colour frame. Range through 300W to 500W. \$450.

Sequenza Compact die cast and extrusion units c/w safety glass, colour frame. Options include barndoor and UV glass. Available in asymmetrical or symmetrical reflectors. Range through 500W to 1K & 1.25K. Using unique Coemar locking wedge design allows for any configuration, vertical or horizontal, to be assembled quickly and cheaply, from single units. This allows maximum flexibility and economy in purchasing. From \$316.

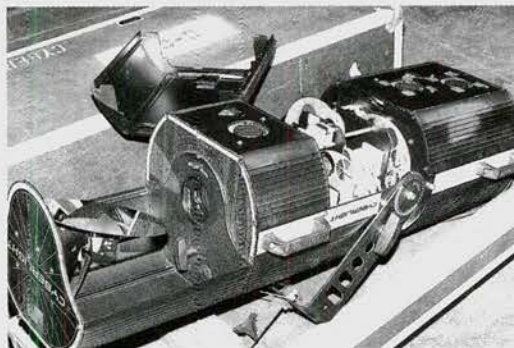
DE SISTI

Coemar De Sisti Australia (03) 9467 8666

Giotto Cyc Lights Compact stainless steel units in asymmetrical or symmetrical c/w wire guards, colour frame. Available in Manual or Pole Operated. Range through 1K & 1.25K. Units available in standard configurations but can be assembled in a variety of configurations. From \$640.

Duccio Groundrow Compact stainless steel units with adjustable feet. c/w wire guards, colour frame. Range through 1K & 1.25K. Single units can be easily assembled in multiple configurations using unique De Sisti hinge system. The same system also allows for multiple configurations to be arranged in curves to suit corners. From \$568.

lamp with an objective lamp life of around 1000 hours. Bradsmith says he has paid between \$390.00 and \$710.00 per lamp because they're not widely stocked in Australia. He prefers to use Philip's lamps because that's what the lights came with and he's been pleased with their behavior and output. He hasn't had to change a lamp in the last 12 months and when he does will change all four to retain continuity of colour temperature and behavior.



MAINTENANCE

"I find them pretty accessible when it comes to changing a lamp or getting access to the gobo wheels. One thing I really like is how well made the lamp base is, it's well designed with a very solid connection. Once you learn how everything works it's very straightforward to change or replace parts. Of course anytime I have to get inside a light, I wish for smaller hands!"

PHYSICAL CHARACTERISTICS

A Cyberlight weighs 45.6kg and is 375mm H by 330mm W by 1066 mm L.

CONCLUSION

I asked Tim what he would say if *High End Systems* should seek his advice about features on their next generation of automated lights. "I'd say one thing only; give us a hot strike lamp! There's nothing more frustrating than accidentally powering down the Cyberlight and then having to wait before you can power up again. A

hot strike lamp would be a great bonus. Other than that I'm very happy with the Cyberlights they've never embarrassed me during a show and they are extremely reliable; plus the service from *GUVT* (now *GUVT* division *TechScape*) is superb which I believe is very important."

I guess there is no greater vote of confidence in a product than going back for a second serve which is exactly what Bradsmith plans to do: "As soon as I can afford it I'll definitely be buying more Cyberlights".

Price: Cyberlight \$13,008

Manufacturer: High End Systems Inc. +1 512 836 2242

Australian Distributor: TechScape Lighting and Audio Distributor +61 7 3358 5118

Singapore and Hong Kong Distributor: High End Systems Singapore +65 742 8266

New Zealand Distributor: GUVT New Zealand +64 9579 4082

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BUYER'S GUIDE

follow spots

Prices are excluding sales tax, which seems to be a lighting industry practice!

DISCHARGE & 'OTHER'

ALTMAN

Chameleon (02) 9310 5222

Explorer has an output comparable with a 2000w xenon. Units are supplied with ballast, stand, lamp and integral colour magazine. \$17,600.

Voyager available in short or long throw versions and uses a 400w HTI lamp providing an output similar to MSR 1200 units. All spots supplied with stand, lamp, internal colour magazine and internal ballast. From \$12,300.

Luminator latest in compact economy follow spots from Altman. Provides an output comparable to 2.5K tungsten units due to its unique optical design. Choice of three MR16 lamps or suit budget and application. Supplied complete with lamp, stand and colour magazine. \$2000.

COEMAR

Coemar De Sisti Australia (03) 9467 8666

Testa 1200MSR Beam Angle 6 - 11.5; 20m - 50m Working Distance; 5 colour magazine option; Smooth Iris; Separate dimming shutter; 18.2 kg weight, 17.1kg ballast; Easy lamp replacement; Standby mode. \$4310.

Testa 2500SHA Beam Angle 7 - 13.5; 20m - 70m Working Distance; 4 colour magazine option; Smooth Iris; Mechanical Louvred Dimmer; 41.3 kg weight, 28 kg ballast; Easy lamp replacement; Standby mode. \$11040.

Testa 575MSR Beam Angle 6 - 11.5; 5m - 30m Working Distance; 5 colour magazine option; Smooth Iris; Separate dimming shutter; 18.2 kg weight, 14 kg ballast; Easy lamp replacement. \$3380.

DOUGHTY

Coemar De Sisti Australia (03) 9467 8666

Roller Race Spigot Bearing mounted spigot to

suit most follow spots allows for totally jerk-free pan of the fixture. Variable tension allows for custom adjustment. Suits all professional applications. \$260.

Professional Follow spot Stand Heavy duty steel & aluminium construction, casters, height adjustable legs fold up storage, excellent stability, suits all professional spots. TBA

Follow spot 2 stage telescopic, sturdy construction, suits all types of professional spots. \$345.

FAL

ELSTA (02) 9568 2100

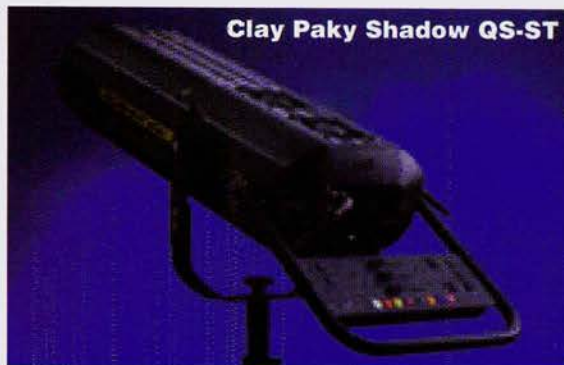
Starlight 1200 HMI-1200 follow spot, 7 dichroic colours, motorised iris, beam shaping 2 lever profile system, dimmer 0 - 100%, fully adjustable strobing from 1 - 7 flashes per second, colour correction and frost filter included, zoom from 6.5 - 10.5 degrees, controllable by DMX-512, dimension 1200x460x410mm, weight 48kg. \$4,915.

Opera 2500 HMI-2500 follow spot, separate ballast, dimmable from 0 - 100%, zoom from 4.5 - 7.5 degrees, gel holder for 5 filters, can be used for ranges of 50m, projector dimensions on 1550x500x400mm, weight 35kg, ballast weight 30kg. \$6,150.

Inse HMI-575-N HMI-575 follow spot, zoom/iris up to 18 degrees, gel holder for 5 filters, can be used for ranges of 25m, projector dimension 910x450x320mm, weight 25kg. \$1,475.

Scala 575 HMI-575 follow spot, zoom/iris from 9 - 18 degrees, gel holder for 5 filters, optional gobo attachment, can be used for ranges of 25m projector dimension 1170x270x280mm, weight 32kg. \$1,800.

LIMELIGHT



Clay Paky Shadow QS-ST

Bytcraft (03) 9587 2555, (02) 9550 3955

Limelight Follow spot are manufactured by Lighting Technology (UK) and are designed for the professional user requiring exceptional performance and handling. The Limelight uses a 2kw Xenon lamp and has superb colour rendition. It is lightweight and compact with left or right side operation, built in soft focus effect, and 6 frame hand operated colour changer. Cables are detachable and the electronic ballast weighs only 21kg. From \$27,500 ex tax.

LYCIAN

Jards Electronics (02) 9582 0909

Superarc 1267 HTI 400/24 lamp long throw. Truss or stand mounts c/w internal PSU, 7 colour internal magazine, nichrome steel iris and coated optics. Price includes adjustable stand. \$13,500.

Superarc 1266 HTI 400/24 lamp medium throw. Truss or stand mounts c/w internal PSU, 7 colour internal magazine, nichrome steel iris and coated optics. Price includes adjustable stand. \$11,900.

Starklite II 1272 1200w single ended HMI. 7



What was once Singapore's Convent of the Holy Infant Jesus is now a glorified retail, restaurant and entertainment complex. The exterior has been lit by 28 Studio Color automated wash luminaires each in its own Ecodome™ architectural housing.

High End Systems Singapore lit up the \$100 million complex in the heart of Singapore's civic and cultural district. Tim Grivas designed the lighting, running it off the Status Que lighting console. The Ecodomes were positioned around three sides of the hall and on the second level to wash the steeple.

DIVINE LIGHT

"To light the steeple we used two fixtures - one from each side," Grivas explained. "The throw was approximately 275 feet. I was very pleased. We used beam shaping quite a bit."

Units were also placed around the courtyard at strategic points to illuminate the total environment.

Discussing his approach to the subject, Grivas said that his choice of colours was certainly influenced by the sacredness of the building - at first.

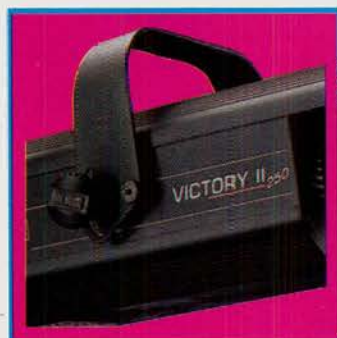
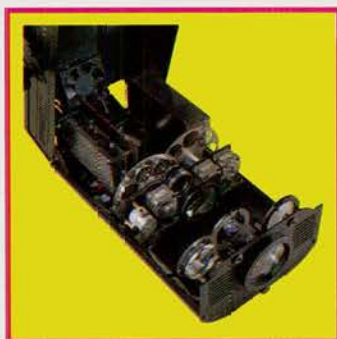
"In the beginning we tried to keep the colours under control," Grivas said. "But as we moved along on the project

we began to see all of the potential of Studio Colors on this building. By the end of it we didn't worry about putting the non-sacred colours on the building. However, one thing we did not do is use fast or abrupt movement, but that is typical in any architectural situation."

Architectural lighting in Singapore is a relatively new trend. The skyline, with its tall buildings close to one another, make it difficult to light a building unless one positions the lighting fixtures to shine from neighbouring buildings.



Has your scanner all the functions of the Victory and a halogen lamp with the power of a discharge lamp? No? What a shame...



VICTORY 250

- * 8 colours using carefully selected dichroic filters
- two-tone beam
- adjustable speed rainbow effect
- high-speed colour changer with or without black-out and music sync
- wheel with 7 easily changed gobos
- 0÷100% dimmer
- 1÷9 fps strobe
- high resolution mirror movement (16 bit)
- 250W/24V halogen lamp, over 300 hr. lamp life

VICTORY II 250

- * 16 colours using carefully selected dichroic filters
- two-tone beam
- adjustable speed rainbow effect
- colour conversion filter
- frost filter for wash effect
- 4-sided rotating prism
- high-speed colour changer with or without black-out and music sync
- wheel with 7 easily changed gobos (4 are adjustable speed bi-directional rotary gobos). Gobo change with or without music sync
- 0÷100% dimmer
- 1÷9 fps strobe
- high resolution mirror movement (16 bit)
- 250W/24V halogen lamp, over 300 hr. lamp life



Pilot 1600 is a universal controller: it can be used with the Victory or any other unit requiring DMX512 standard

SGM
LIGHT TECHNOLOGY

20th
ANNIVERSARY

BUYER'S GUIDE

follow spots

Prices are excluding sales tax, which seems to be a lighting industry practice!

colour internal colour magazine, gobo slot for patterns and rotators and internal power supply. Price includes adjustable stand. \$13,000.

1290 XLT 2kw xenon long throw arena spot. Dichroic cold mirror reflector, gobo slot, dual control for left or right hand operation. Price includes adjustable stand. \$21,300.

MANFROTTO FOLLOW SPOT STAND

Miller Professional Products (02) 9439 6377

MAN. 070 2 section follow spot stand with chrome plated centrepost. Aluminium base. \$275.

MAN. 070BU 2 section follow spot stand with black chrome plated centrepost. Includes leveling leg with aluminium base. \$300.



Altman Luminator

TAS

Coemar De Sisti Australia (03) 9467 8666

Inse 1200MSR Beam Angle 8 - 22; 15m - 40m Working Distance; 4 colour magazine option; Smooth Iris; 13.4 kg weight, 13.2 kg ballast; Easy lamp replacement; Mechanical louvred dimmer option. \$2,230.

CCT LIGHTING

Rosco Australia (02) 9906 6262

Minuette Pursuit 650w condensor source complete with blackout iris. Suitable for left and right

hand operators. Ideal for schools and small auditoriums. \$900.

CONVENTIONAL UNDER 2K

COEMAR

Coemar De Sisti Australia (03) 9467 8666

Testa 1000/1200 Beam Angle 7 - 13; 7m - 25m Working Distance; 5 colour magazine option; Smooth Iris; 17 kg weight; Easy lamp replacement; Complete with lamp. \$1840.

FAL

ELSTA (02) 9568 2100

INSE 1000-N Halogen 1000w 240v lamp, Gel holder for 4 filters included, beam divergence 13 degrees, size 830x440x320mm, weight 13.5kg. \$982.

SCALA 1000 Halogen 1000w 240v lamp (CP24), Gel holder for 4 filters included, blackout shutter included, interchangeable iris, beam divergence from 9 - 18 degrees, optional 66mm gobo holder available, size 1170x270x280mm, weight 23kg. \$1,392.

LYCIAN

Jands Electronics (02) 9582 0909

1236 Clubspot compact 82U 360w spot including internal colour magazine, nichrome steel iris. Supplied complete with adjustable stand. 100FC @ 18 metres. \$1840.

1238 Super Clubspot 82U 360w spot c/w variable focal length, internal colour magazine, and adjustable stand. 100FC @ 24 metres. \$2400.

PROLITE

Prolite 1800 501 312

PR12-FS/1200 1200w fan cooled with integral colour magazine, iris and shutter blades/gobo slots. Compact size 890mm long. Made in Australia. \$1195.

SELECON

Various distributors

Chorus 1200 1200w condensor, built-in iris, condensor lens optical system provides 1000 lux at 16m, braced yoke, adjustable front and rear guide handles, adjustable yoke balance position, four colour manual changer accessory, dimmer module accessory, foldable stand accessory, compliant to CE standards. \$1350 (without lamp).

Selecon Performer MSR Entech Product Award Winner. 1200w MSR/HMI follow spot, single action zoom operation, adjustable balance point and guide handles. Operational controls include: iris; mechanical dimmer and cuter. Reference scales included. Half power operation drops light output to 48%. Lamp hour meter included. Left or right side operation, compliant to CE standards. \$5640 (without lamp).

S.G.M.

Ashton Admor (08) 9478 3800

Newton 1200 HMI intelligent follow spot with 8 colours, iris, shutter/strobe, dimmer. Supplied with controller. Sturdy telescopic stand and adaptor additional \$801. \$6499.

TAS

Coemar De Sisti Australia (03) 9467 8666

Inse 1000/1200 Beam Angle 8 - 22; 8m - 23m Working Distance; 4 colour magazine option; Smooth Iris; 12.8 kg weight; Easy lamp replacement (650/1K/1.2K); Convection cooled - completely silent. \$1125.

Shadow Basic HMI 575 available in either normal angle or a wide-angle version, this model takes a HMI 575 lamp. Built-in control panel with a variety of sliders for colour selection, colour wheel rotation, iris in diameter, dimmer and strobe effects, a switch for strobe effect cut-out and three symmetrical pairs of push buttons to enable preset colour-iris-dimmer values. \$4917.20.

Shadow Basic HMI 1200 available in either normal angle or a wide-angle version, this model has the same characteristics as above but has a greater application range and takes a HMI 1200 lamp. \$5736.90.

Shadow HMI 1200 QS-ST electronic short throw model ideal for theatrical and mobile applications. Has a system of interchangeable lenses (normal or optional wide-angle), a HMI 1200 long-life lamp; graduated scale on mounting bracket, external focussing on front lens with input signals of 0-10v, RS232 and DMX512. \$7745.90.

Shadow HMI 1200 QS-LT electronic long throw model has a built-in wide-angle lens allowing for the immediate switching of the aperture angle. Uses a HMI 1200 long-life lamp with input signals of 0-10v, RS232 and DMX512. Also has an external focusing knob on the rear panel with graduated scale and pointer. \$9015.55.



Lycian 1290 XLT

COEMAR

Coemar De Sisti Australia (03) 9467 8666

Testa 2000 Beam Angle 5.5 - 12; 15m - 35m Working Distance; 5 colour magazine option; Smooth Iris; Separate dimming shutter; 20.5 kg weight; Easy lamp replacement; Complete with lamp. \$3260.

FAL

ELSTA (02) 9568 2100

SCALA 2000 Halogen 2000w 240v lamp (CP72), Gel holder for 4 filters included, blackout shutter included, interchangeable iris, beam divergence from 9 - 18 degrees, optional 66mm gobo holder available, size 1170x270x280mm, weight 24kg. \$1,556.

PROLITE

Prolite 1800 501 312

PR12-FS/2000 2000w fan cooled with integral colour magazine, iris and shutter blades/gobo slots. Compact size 890mm long. Made in Australia. \$1255.

PR22-FS/2000 2000w fan cooled with integral colour magazine, iris and shutter blades/gobo slots. Full size unit 1036mm long. Made in Australia. \$1450.

PRMW-FS/2000 2000w metal halide unit - output exceeds 1200w MSR. 5.9K colour temp. 4000 hour lamp life and high quality beam. Fan cooled c/w lamp etc. Made in Australia. \$2700.

SELECON

Various distributors

Selecon Performer Quartz 2500w Tungsten Halogen follow spot, zoom operation 8-14 degrees, adjustable balance point and guide handles. Operational controls include iris and mechanical dimmer. 6 way colour changer accessory, dimmer module accessory. Left or right side operation, compliant to CE standards. \$2750 (without lamp).

freedom (ˈfri:dm) n. 1. the state of being free, esp. to enjoy political and civil liberties. 2. (usually foll. by from) exemption or immunity: freedom from taxation. 3. liberation, as from slavery. 4. the right or privilege of unrestricted access: the freedom of a city. 5. self-government or independence. 6. the power to order one's own actions. 7. ease or frankness of manner. 8. excessive familiarity.

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40 Kent Road Mascot NSW 2020
Phone: (02) 9582 0909 Fax: (02) 9582 0999

I saw *Coppelia* at the Parramatta Riverside Theatre, where I had a disturbing experience. Ten minutes into the first act, I felt an urgent tapping on my shoulder. I turned in the darkness, baffled and slightly paranoid. A woman's voice hissed, "Could you please keep your head still?"

I spent the rest of the ballet with my head frozen in fear, in case she smacked me for disobedience.

Coppelia was originally designed for Suncorp theatre in Brisbane, but like most

magic and romance. I'm not really in control of what happens on the road. The venues in each town really dictate what they're able to do."

Coppelia on tour

After the show, everyone including Peter Basrick, the audio operator for the Parramatta Riverside Theatre went to work striking the set. They planned to have the

particularly in Victoria where venues seem to be under capitalised. We had to tailor the lighting design from 144 channels to a minimum of 60 channels. Even with Parramatta, the lighting plan that was sent here, we had to lose one bar, with 30-40 instruments.

"I liaise with each of the venues by fax, phone and in person, to get the thing to work. I try to keep the design true, but sometimes we have to lose instruments,

the Queensland Ballet tour Coppelia



Queensland Ballet works it also tours. The ballet was at the end of the fourth week of touring. They had been to Orange, Newcastle, Griffith, and were off to towns in Victoria, then Hobart, and back to NSW. So LD David Whitworth has modified his original design for touring.

Whitworth has been designing for The Queensland Ballet for over 17 years, and has done 145 productions for them. He was full time until '89, when he went freelance. He currently designs for the Queensland Theatre Company and other theatres. He loves variety, hates to be typecast, and emphasises that he is training to be an acupuncturist, and teaches rock climbing!

Lighting Dance/pros and cons

"I like the space, and lighting the space," Whitworth said. "I also love the energy that dancers have.

"Modern dance is difficult because you have no script, no guidelines. It's completely new. I like that, but it's also quite scary. You're breaking new ground, without rules. With a play, you always have the script as an anchor point. I suppose I'd qualify as one of the country's most experienced lighting designers for dance. Over the years, I feel I've got a grasp of what's needed, it's in my bones.

"*Coppelia* is a classical ballet, but this production is set in the '50s in Australia. I tried to give it a very Australian feel in the first act. The second act, an interior, is quite dark. We were looking for a certain

truck loaded by 12:30am, then put everything in the house back to normal, adjusting and refocusing the lights.

Up on the stage some people were feeling the strain already. One tech said to someone helping strike the lights, "Come over here, and do this."

The man answered, "I'm helping X over here."

"We don't!" the tech shouted.

The original lighting design for Brisbane had 250 instruments, mainly 1K, 2K fresnels and Profiles. Mike Long, the touring TD, explained that, "David Whitworth tends to augment a lot of his gear with Patten 64s, partly to get strong colour, and it helps us on tour. We travel with 56 Pattens, and the same number of .5K Profiles. We bring most of our lights for the sidelighting, and the beams as well. We have 40-50 Profiles thrown on the side, with high Parcans on the side and back. It's the ubiquitous wash of light, with strong colours, simple to focus.

"We have a 40' truck out the back which we fill. The venues vary. Parramatta is well equipped, but we're going to small places that don't have any equipment, par-

or change a colour. It's all a bit adaptable. David is well aware of the limitations.

"My first question to the venues is whether they have a lighting area. One of the tech specs we sent to the people looking for venues was certain minimum requirements. One was computer lighting boards, looking at 96 channels for a normal plan, and soft patching capability. The control systems need to be up to scratch, and the basic wiring systems.

"We're under time pressure, so a lot of pre rigging has to be done by local techs from the plans sent ahead. If they don't, and that's happened once, we get really behind schedule. It can be a little bit fussy. The lighting placement depends very much on how the set fits in, and that depends on the space itself, and what sort of grid exists.

"I have all the theatre specs ahead, but when I get to a venue, I can get a few surprises. Whether the techs are any good can be a problem. They're very professional here, at Parramatta. They understand that ballet works with sidelight, and very strong colours. Most of the small country places have lights out the front, and none on stage. That's the problem. If we use lot out the front, it flattens it out, which is really not what you want in dance."



• Madeleine Murray

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MH-120 Hypermoon

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MH-769A Power Flash Strobe

MH-769C Strobe Controller

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SELECON PC 1200

By Cat Forcer



The Selecon PC 1200 luminaire is not a new light but it has been attracting a fair amount of attention recently due to its lens which Selecon design themselves.

The PC lens provides certain unique beam characteristics - clarity of light, wide range of beam angles and lack of spill. However most of these characteristics are destroyed or compromised on off-the-shelf moulded PC lenses. In an effort to disguise the lamp filament image and secondary optical effect caused by the slumping of the centre of the lens during cooling, these lens have a heavy pattern or diffusion texture pressed into the rear surface. Some of these treatments are so heavy that the effect is to produce a beam very similar to that of a fresnel.

Selecon's approach is to grind flat the rear surface to remove the slumping and therefore the worst of the 'black hole' effect. A light texture, similar to 114 Hamburg Frost is moulded onto the front outer diameter of the lens. This just softens the beam so when you want to join adjacent beams together to achieve "even" illumination there are no distracting hard beam edges. The result, claim Selecon, is a true PC beam.

Ian Landel, Technical Director at The Gold Coast Arts Centre, gives his opinion on the Selecon PC 1200. The GCAC has had 12 of the fixtures for over two years

APPLICATION

"We bought them just as they came on the market," said Ian. "They're a nice in between lamp - between a Profile and a Fresnel. I use my 12 over the stage as special spot fills. Being a community arts centre we run a standard rig used by the dance schools, churches, conferences etc. They don't have a design, they just use what's hanging in the air. We find them an incredibly versatile light for filling in those extra bits and pieces.

That leaves the Profiles for doing gobo projection and stuff because the edge is quite soft but still defined - makes nice corridors and special areas."

COMPETITORS

When looking to purchase the lights, Ian never looked at other brands as he had been dealing with Selecon on a deep level for some time.

"I like to buy Selecon gear and I think they're a far better brand than Strand or anyone else," he said. "I'm a Strand boy in terms of growing up with them and all their gear but as a company that manufacture lights, they're just not there any more. Selecon was filling that gap quite happily until ETC came along but they still make good zoom spots and I've just bought some of their cyc lights."

QUALITIES

"The PC 1200 does have a very nice clarity of light," Ian stressed. "It beats everybody else. I've seen all the others, including Prolite, but there's something about the Selecon - it's small, has a lot of light output and a wide range of beam angles.

That means the light can do a number of tasks. At the moment we have *42nd Street* running and I'm using them to light a couple of special areas, a couple at the front and a couple at the back, and I'm also using them to fill in a couple of dim spots. They're just a nice light you can throw around."

FOLLOW SPOT USE

"I've often used them as simple follow spots as they have the same beam shape as a follow spot," Ian told me. "I used them on a school production of *Les Mis* from the side and, because of the shortness of the throw, they came out the same intensity of the Selecon Performer follow spot we have."

LAMP

"We use a 1200 lamp, normally a Philips although the lamp source is dictated by buying price," said Ian. "Because we're a community funded theatre we have to watch the budget. I don't

find any difference between the major manufacturers of lamps. Lamp life is a lamp issue rather than a unit issue but the unit doesn't seem to be lamp hungry. I find the whole Selecon range good in that respect. The venting is very together."

SPILL

"There is a bit of a back wash but it's not too much of a drama," Ian said. "It comes from the venting and I'd rather have the lamp cooler with a little light escaping than a light that wants to heat up."

MAINTENANCE

"It's fine as the whole bottom drops out but I haven't had to do any yet," replied Ian.

SERVICE

"I have no worries with service," Ian said. "I buy a lot of products which are either prototypes or first off the production line and they always give great service."

IMPROVEMENT

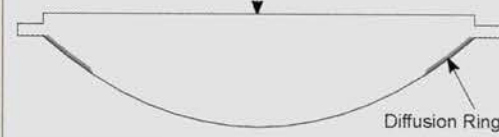
"Maybe the locking system could be improved," suggested Ian. "It hasn't failed yet but it will, it's one of those ones that will just go eventually. I've said that to Selecon but they replied it was price prohibitive which is fair enough."

CONCLUSION

"The unit is robust, when you lock it off it stays there," said Ian. "The barndoors stay there, which is more than I can say

PC LENS 1

Rear surface is optically polished flat to eliminate the irregularities found in cast lenses.



Diffusion Ring

about some brands of lights out there on the market. Their reflectors are quite good. I'll buy more when I can afford too.

"For an all round lighting fixture that can function front of house, on stage and as a follow spot, I don't think there's a better lamp."

Price: ex tax, without lamp - \$560. Barndoor - \$95.

Manufacturer: Selecon +64 9 360 1718

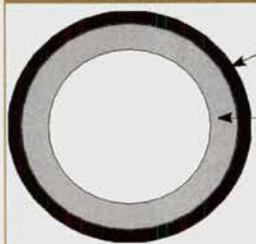
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Hong Kong Distributor: Prosperity Lighting +852 511 0022

Singapore Distributor: Te Deum +65 742 9131

New Zealand Distributor: Selecon +64 9 360 1718 or 0800 503070

PC LENS 2



Lens mounting ring to reduce unwanted light scatter.

Diffusion pattern on outside of lens provides a slight softening of the beam edge to produce a beam similar to a profile luminaire beam with Rosco 114 Hamburg Frost.

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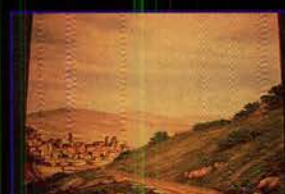
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Backdrop under white light



Backdrop under Wildfire UV-A

Technical Bulletins and Application Notes available upon request.

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Club Sandwich

Edited by Caroline Grafton
Compiled by Nicky Morris, Daniel Cole & CG

Product News from PLASA '97

Numark DM1820X Pre/Amp Mixer



Numark has released an installation pre/amp mixer (pictured above) with all the usual specs you'd expect with some new innovations. Three Zone capability is allowed by a master and two zone level controls; It has balanced outputs; full equalisation and assignable 35dB KILL switches for treble, mid and bass. Price A\$1199inc. Available from Universal Lighting & Audio (ULA) Pty Ltd. Call Sales Hotline 1 800 648 111.

Gemini CDJ-1200 Top Load CD Player

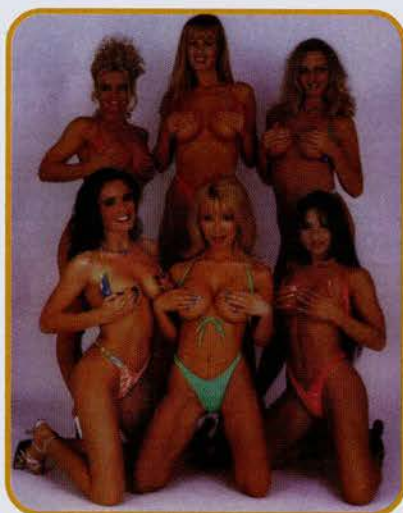
Gemini says "Lets you create musical magic like never before. At a price like never before". This product (pictured right) is targeted at the

Pioneer CD500 market place. Features include Digital Output -connect to DAT, MD, PC or CD-R; Quick response Jog Wheel; + -12% Pitch Control; Pitch Blend; Auto Cue; Multi-Function LED Display; Dimensions w321mm x h102mm x d356mm; Weight 2.54kg; But I love this - it has Durable Rubber Buttons. Dom Marano from Gemini distributors, Disco World, is sorry he didn't have the product in Australia early enough for the recent Sex Expo in Melbourne - the rubber buttons, he feels would definitely had an impact. Price POA - the products so new that price is still an issue. Call Disco World on 61 3 9735 0588.



Numark Vinyl Package

For those with a love for one single groove, Numark has released a package containing two TT1700 Turn Tables (pictured below), Stanton Cartridge and a 1000X Mixer, in a specially released colour (a very funky rich blue). The TT1700 has + -10% pitch adjustment; Anti-skate correction system; Retractable guide light, removable head assembly; adjustable S-shaped tone arm; Aluminium platter; Strobe illuminator; Anti-static slip mat and is available with Stanton 500AL cartridge. The complete package is available for A\$999inc. from Universal Lighting & Audio (ULA) Pty Ltd. Call Sales Hotline 1 800 648 111.



This is typically the kind of artist agency advertisement you see in many Euro-Trash disco magazines. We at Connections would never dream of publishing an advertisement of this genre. (Picture as printed in *Nightlife Journal*, Aug/Sep 1997 Vol. 3, No. 1

Club/Venue News

► Bar Cleveland in **Surry Hills**, Sydney has just added a new level. Called **Level One** the bar features a Cocktail lounge, function and dining area, which breaks out on Friday and Saturday nights with a selection of DJ's pumping out the sounds of Lounge music, moving into dance music as the night gets on. A new sound and lighting system works well to produce interesting effects with the art deco decor. The club is opened on Friday's from 5pm and Saturdays from 6pm for cocktails and dancing until 2am, with no cover charge. To experience the club for yourself, make your way to Bar Cleveland, cnr. of Bourke and Cleveland Sts, Surry Hills or ph. (02) 9698 1908 for details.

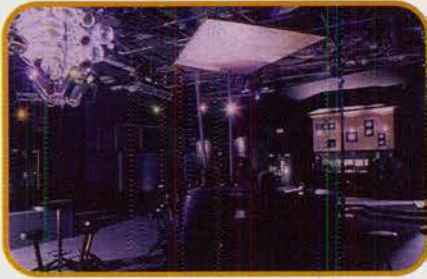
► **Brisbane** has seen the light of a new live gig bar called **The Chelsea Club and Bar**. Housed in a heritage listed church, the Chelsea is set to bring you bands of all kinds, along with cheap drinks, they promise. An altogether comfy place where everyone is wel-

come. Wednesday, Thursday from 8pm and Sunday nights from 6pm there's no cover charge with DJs playing the latest releases 'til very early or late, whatever!. Added attraction on Thursdays is a live band. On Friday and Saturday nights live bands are playing (cover charge applies) or enter after the band finishes and get in for the free sounds from selected DJs 'till 5am...Whew. To find out more, call the Chelsea on (07) 3257 0619, or go and see it for yourself at 25 Warner St, The Valley (Beside the Healer).

► Despite the rumours of the cessation of live entertainment, **The Brookvale Hotel** in **Brookvale**, Sydney is still hosting live gigs each weekend. With a new management team, The Brooky is looking forward to a new interior design due for completion this month. If you'd like to find out who's playing this month, ph. (02) 9905 0217 or go to The Brookvale at 509 Pittwater Rd, Brookvale.

► **Melbourne's Velvet Underground** is pumping Friday, Saturday and Sunday Nights between 10pm 'till the wee hour of 7am. On

02 Bar & Club



A venue in Northbridge is the new home to nocturnal patrons in the Perth city area. The newly revamped dance venue is the 02 Bar & Club. Stylish simplicity encased in a bright yellow facade is the trademark of this six year old venue.

Local Perth company, Lighting Workshop, won the installation contract for 02. At the core of the lighting design is a centrepiece that stands 12 feet above the dance floor. Truss, designed into a pyramic structure, has been suspended from the ceiling with a variety of lighting effects, enhancing the minimalist design approach. The new lighting spec includes: 8 x Clay Paky MiniScan HPE's, VIP 300 projector; Pulsar Masterpiece Replay unit; 2 x Martin Destroyer effect lights, 2 x Sweeper effect

lights; 2 x Constella Spectrums, 2 x Shockwaves with a dedicated controller for the surrounding balcony. Lighting Workshops' Anthony Littlewood- says, "we didn't want the lighting to detract from the room we used the MiniScan HPE's to get the right look and the effect is stupendous."

Display Line VIP 300 enclosed in a clear perspex dome, projects the name of the club and its sponsors onto the external facia of the building. Anthony continues, "it is proving to be a good advertising medium for them (02)(02) management are looking at selling advertising space and with customised gobos - practical applications are limitless." The original FOH speaker system comprising of a Turbosound satellite system with four pods in the ceiling and two Cerwin-Vega subs remained untouched.

The two video screens the club had were replaced by fifteen video monitors of various sizes scattered around the venue. Control is by a SPA Video Replay unit which has touchscreen control. There is also a graphics package to scan logos, mix images etc.

02 owner Tony Varano (SBA) is apparently impressed with the array of new lighting found in his club, and is more than impressed with the efforts of the Lighting Workshop.



Lighting Workshop Tel. (08) 92271221.

02 Bar & Club - 139 James Street, Northbridge, WA. Tel. (08) 932 8323.

Friday nights head for *The Milk Ear*, where music policy reigns. Enjoy the sophisticated smooth sensations of deep disco or decadent house, all for \$5 with a pass and \$8 without. Call Alex on 0418 377 227. *Rotation* on Saturday night pumps out the sounds of uplifting house and the latest upfront beats the world has to offer. Cover charge for Saturday nights is also \$5 with a pass and \$8 without. Call Tracey on 0477 345 870. If your looking to reminisce on Sunday nights, Velvet Underground introduces *12 Inch Sundays*, where you can hear the best 12" hits from the past 20 years, cover charge is \$3 with a pass, and \$5 without. Call Alex for more info. Velvet Underground is at 15 Park St, Sth Melbourne.

► **The Public Bar in North Melbourne** has had a slight refurbishment, new colours and furniture inside, with an improved exterior - "a bit of a fence" - creating a beer garden. The Public Bar has live bands (usually under five dollars) weekdays and weekends, ph. (03) 9329 6522 to find out who's playing, or just go to 233 Victoria St, Nth Melbourne.

► Wednesday through to Saturday nights, make your way to **Worldsend** if your in **Adelaide**. First of, the weeks run is Wednesday s Drenching Disco and Rough Beats, the best House 'till 4am; Fridays at Worldsend is Funk night. Finish off with Saturday Night Disco 'till 8am, a night of music through the decades from the 60's to the 90's. The venue is open for party's and functions also boasting a

outdoor area, Worldsend is at 208 Hindlay St West, Adelaide. Ph. (08) 8231 9137 for details.

► In Portland, Vic, a business group has failed in an appeal to win a permit to operate the region's first nightclub for people mainly 35's and over. The Glenelg Shire originally ok'd the plan to convert the old Portland Post Office into a club but withdrew support after changes were made to the original proposal. The project involved part demolition of building and works, a reduction in required car parking and use of the land for a hotel with a general class 2 licence and associated parking. The developers now have the option of re-submitting a revised proposal for the building, look for another site or forget the idea entirely.

► The Commercial Bar, Bistro and Nightclub in Dubbo, NSW, has won a three-month trial to continue operating until 5am. One of the conditions of the trial was that no patrons are to be admitted after 1am and food be made available wherever liquor was served. Dubbo City Council planned to cut back the 5am licence in response to a public survey criticising late night trading in general. The Commercial hotel claimed that it been singled out as it is the only hotel in Dubbo that closed at 5am on Fridays and Saturdays. Recent renovations have cost \$750,000 and security expenses are around \$3000 a week. An editorial in the Daily Liberal said there appears to be no widespread public opposition to 'Dubbo's only viable nightclub trading until 5am' ac-

ing that in general neither the Commercial nor pub patrons were 'the primary cause of nocturnal anti-social behaviour in the city's CBD'.

► Still in NSW, it is reported that approximately 100 registered clubs in the state are on the verge of insolvency. Heavy borrowing and over expansion have failed to attract new patronage or increase in turnover. Blame is targeted at the increase in the number of gaming facilities in hotels, casinos and TAB promotion. Cardiff District Workers Club in Newcastle for example is said to be in the red to the tune of \$11 million. Outstanding employee entitlements equals \$1 million with a further half million owing to the Local Administration Board for poker machine tax. The club has submitted a creditor repayment plan

► A recent study into nightclubs, bars and dance parties, revealed that many venues have removed basin taps in toilets to increase counter sales. The average price of water in venues is \$2.50 reaching as high as \$3.50 in some clubs. It is reported that one venue actually supplied a large ice bucket in which patrons could wash their hands and cool down. Fabulous for personal hygiene. Amazing isn't it! Door and bar charges just aren't enough. Promoters attract an audience, encourage hyper-dancing and then don't even have the decency to provide free water in the toilets to prevent dehydration. Dehydration is medically proven to be one of the high risk factors when under the influence of certain chemical elements.

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THE PA PAGE

How LOUD is LOUD?

Part Two, by Michael Orland.

I can recall many times over the years when I've gotten to venues, and the owner of the venue has opened the room up for us thinking, "Cool, the roadies are here. I'll put on some loud music for them to set up be!" GREAT!! Know what I like to hear when I'm setting up? Peace and Quiet! Occasionally I have enjoyed the blissful sound of silence only to have them interrupted by musicians turning up early.

Sometimes there will be rustling of Ragones onstage as drummers are unpacking while I'm running cables. And she-it, the number of times I'll be plugging in an amp at the exact split second the drummer hits the first CRACK on his snare. Now, I'm not normally a jittery person, but do you remember that Warners cartoon where the little dog yips at Claude Cat from behind sending him shooting up to the ceiling? DB reference points. Initial snare crack minus ragone rustling equals loud.

Last month I talked about a mate who saw AC/DC at the Sydney Ent. Cent. No, it wasn't me. The last time I saw them was in 1977, and, incredible as it may seem, I have still never set foot inside the Ent Cent. Anyway, I have another further different mate who sees them every time they pass through, and he made an interesting observation. During the song "For Those About to Rock", cannons are "fired" on stage. After each cannon shot, his perceived volume of the band would drop by 15 dB.

What is normally referred to as the ear drum has an anatomical name of the Timpanic Membrane. This vibrates against a lever system of three tiny bones which transfer vibration to the inner ear. When the tears are confronted with a loud sound, the "Acoustic Reflex" occurs, as two specific muscles contract. The "Tenor Timpani" puts tension on the timpanic membrane, and the "Sta-

pedius" puts tension on the last of the three bones. Thing is, this mechanism takes about 40 milliseconds to react, so it offers little protection against cannon shots and unexpected snare cracks. With sustained loud noise, the two muscles can tense and relax around 20 times per second, eventually going into spasm, causing, among other effects, the perception of a dull roar, something like distant traffic, after a gig.

When people talk about "getting used to loud noise" this does not necessarily mean that the muscles in their ears are getting any better at offering protection. It usually means that the brain has learned to discard what it perceives as relevant information. While the damage continues.

The above is related to the "wince" described last month, and helps explain the phenomenon of the drumfill. Its easy enough to understand the need for drummers on loud bands to hear the kick drum amplified. It can easily get swamped. But the snare?! Snares are loud! And their heads are two feet away from the source! I can often tell what a drummer wants in his monitor by the look on his face when he plays. The more relaxed they look, the less snare they require. The more they tense up as they prepare themselves for the impact of each snare hit, the more they claim they can't hear it, even though it may be deafening to everyone else on stage, including the puzzled monitor operator.

Acoustically, their toms are nowhere as loud as their snare, but the apparent contradiction is that because they usually don't hit them as hard, they don't need them as loud in their monitor, if at all.

Folks also often talk about gettin old and losing the top end of their hearing. This does happen as the upper limits of your hearing reduce from 20K to 16K and

lower within a specific dB range. But the real damage for many of us occurs around the 4K area. This happens to be an important resonant frequency within the overall ear mechanism, very prone to damage under repeated acoustic assaults. It is part of our human evolution that this sensitive area of hearing is necessary to interpret speech. The real danger sign of impending permanent hearing loss for a music industry worker is not that cymbals don't sound as "pingy" as you remember. It's not understanding conversation. So often highly skilled, intelligent road crew are caricatured as dummies because they often reply to question with a "Huh?"

It's not that they can't understand what's said. It's that they can't HEAR what's said.

Within each article I try, with varying degrees of success, to encapsulate a "point", linked with a little advice. This month's point/advice? Ear plugs!

They are the Amex card of my personal effects. I won't leave home without them. It is vital that they may be both cheap and comfortable, so that you will never hesitate when you think they may be good idea. Yellow cylinders may be cheap, but I find them irritating after a while. I used to occasionally remove them, despite noise, to give my ears a rest from the discomfort.

I favour the tapered pink/orange squishy type which I buy in bulk, not from the corner chemist, but from the large building suppliers, at about 30 cents a pack. No excuses.

Thanks to Steve Nagy for his assistance in the preparation of this article.

Michael runs TPAC in Sydney, call (02) 9799-7219.

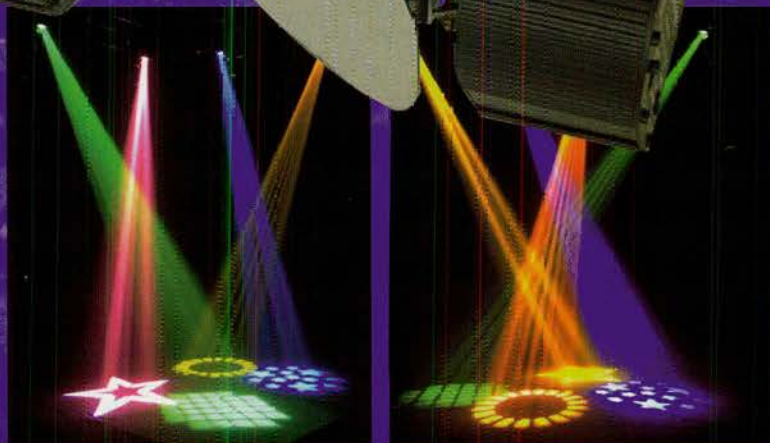
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